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ABSTRACT

Data were obtained from surveying and testing 86 teachers and 979 trainable mentally handicapped (TMH) children. Results indicated that most teachers were married and had college degrees, but had only limited experience and no relationship outside the classroom with retarded children. Over a fourth were not certified. Most preferred to teach preschool or elementary, were disturbed by behavior problems and lack of pupil response, and viewed patience, calmness, and a sense of humor as greatest teacher assets. They emphasized the development of social skills abilities in their pupils and regarded the goals of social skills and emotional maturity as the best liked characteristics of their pupils. Most pupils in the 40 to 49 IQ range were judged capable of intelligible speech; mongoloids outnumbered brain injured children; most pupils had been in the county programs for 2 years or less. Over half the pupils had no retarded siblings; most came from blue collar families with the mother at home. Statistical analysis indicated that the vast majority of teacher variables were unrelated to pupil growth as measured by the Cain Levine Social Competency Scale. Six related studies are included. (JD)

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FINAL REPORT

PROJECT 5-1051

GRANT NO. OE-5-10-022

AN EXPLORATORY STUDY OF THE RELATIONSHIP BETWEEN THE TRAINING, EXPERIENCE, AND SELECTED PERSONALITY CHARACTERISTICS OF TEACHERS AND THE PROGRESS OF TRAINABLE MENTALLY HANDICAPPED CHILDREN

June 30, 1969

U.S. Department of
Health, Education, and Welfare

Office of Education

Bureau of Education for the Handicapped

EC 005 768E

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INTRODUCTION

The State of Michigan had permissive legislation for public school service to the trainable mentally retarded as early as 1949. Since it was not an act specifically for trainable mentally retarded (TMRs) it was possible to interpret it in several ways. The lack of clarity kept implementation at the minimum.

The Act passed in 1962 clearly delineated the TMRs and established a new state financing pattern. This was a direct response of the legislature to the frustration of parents of TMRs in their efforts to persuade local boards of education to provide for their children. The new law stated that programs could be provided by local districts through contract with the Intermediate District or operated by them. Further, the state reimbursement was 75% of total program cost including transportation.

Wayne County with its more than one third of the state's children, more organized and informed parent associations, and parent operated programs required more personnel to gear up than was available under the state certification requirement. The foci for all teacher preparation were for educable retarded with that certification applied also to TMRs. There did not appear to be a defensible rationale for this policy yet it prevailed in many states. Visitations to programs in other parts of the country sharpened the concern. The literature provided little help. The fact remained that educable retarded were preparing for lives as independent self supporting citizens while the trainable would always require some sheltered or supervised living situation. At this point the State Department of Education indicated a willingness to consider other qualifications for certification criteria provided they could be documented.

The children and teachers in this study were in public school programs operated under the new public Act or in those operated by parent associations. Initially the major portion of the programs were those of local districts under contract to the Intermediate District; hence the administration and program plan was the direct responsibility of each contracting district. Only one center of approximately 100 children was operated by the Intermediate District. During the course of the study many local districts requested that the Intermediate District directly serve their TMRs. At the conclusion only three large districts provided for their TMRs and the rest were directly served in three large regional centers operated by the Intermediate District.

It was believed that more realistic criteria for training and certifying teachers of TMRs could result from the study of the relationship of different kinds of teacher training, experience, and personality characteristics of teachers to teaching effectiveness. The present study was developed to systematically explore the effectiveness of present practices. At the time of the Grant, it was the first to be given an Intermediate District. It has resulted in a demonstration of what can be accomplished when local schools, an Intermediate District, and a university share their talent in a common effort.

Encouragement and cooperation from the superintendents of the local systems, parent associations, many persons in teacher training and administrators of programs in various parts of the country constantly reminded us of the potential significance of the study. There were times when without these, the temptation to put the lid back on Pandora's box might have prevailed. The process of approval for releasing teachers for participation in the study was one such time. The loss of one co-principal investigator at the end of the first year, the associate investigator after one and one half years also created some anxious moments. The riot of the summer of 1967 (Detroit) displaced some children in the sample due to the burning of a residential section. Additional time and effort was taken to locate those children still in the area.

Data collection, while more time consuming than expected, went smoothly excepting as it pertained to information about professional training of teachers. Frequently the institution had no records. Other times when they were available the information recorded was not relevant to the purposes of the study. Nevertheless, the study represented the most comprehensive investigation of TMRs to date. While the results have been less than anticipated there is a body of information which gives direction to additional studies.

REVIEW OF THE LITERATURE

Recent years have witnessed a significant trend toward the establishment of public school classes for trainable mentally retarded (TMR) children. Prior to 1950 there was a virtual absence of public school provisions for the severely retarded (Kirk, 1957; Semmel, 1958; Wirtz, 1956). Wirtz (1956) concluded that the parents of trainable children, due to the many problems involved in public and private residential school placement, have insisted upon public school provisions within the community. In many communities parents have had to prove the feasibility of such classes through the inauguration and administration of parent-sponsored programs. As parents demonstrated the feasibility of such classes for their children, many states have provided legislation leading to the establishment of public school classes for the TMR within the community. By the late 1960's programs for TMR children and youth have become an integral part of the public educational programs offered to all of America's children (Lance, 1968).

The rapid growth of programs for the TMR has brought a concommitant group of unresolved problems related to the training of those pupils in public school classes. Martinson (1967), Garrison (1966), Wolinsky (1966), and others (Gorelick, 1963; Bateman, 1966) have attempted to organize some of the theoretical constructs upon which training of the severely retarded might be realistically consummated in day school classes. Several workers have considered and discussed problems of curriculum (Cameron, 1966; Daly, 1966; Warren, 1963). Problems of organization of classes, criteria for screening and selection of children, methods and materials, evaluation and financing have also been identified and considered by practitioners in the field (Bindman and Klebanoff, 1959; Cain, Levine and Elzey, 1963; Harvey, Yep and Sellin, 1966; Jubenville, 1962).

It is generally agreed that the success of public school classes for the TMR cannot be attributed to any single factor. However, most observers appear to agree that a successful program is dependent on achieving adequate financial support, appropriate physical facilities, a realistic curriculum plan, and adequate, well trained teaching personnel.

While all of the above factors are vital to the ultimate success of a school program for the TMR, it appears to the present writers that no factor bears greater relationship to the degree of success attainable than the competency of teaching personnel. Financial support may be kept at a minimum, housing facilities and materials can be only adequate, but the staff must be competent if success is to be realized. Curriculum plans are amorphous without effective interpretation and presentation by the teacher.

With the recognition of the importance of the teacher to the ultimate success of training the severely retarded has come too little consideration of criteria for the selection and preparation of teaching personnel for classes of TMR youngsters.

In recent years concern for teacher effectiveness with normal children has grown. In addition, the review of the literature on teacher effectiveness has revealed an exiguous amount of research in the field of Mental Retardation. Cain and Levine (1963) have stated that research on the extent to which teacher characteristics affect the achievement, personal, and social development of retarded children is virtually nonexistent.

Some data presently exist to aid the teacher educator in the selection of candidates for preparation as teachers of the TMR. The Minnesota Teacher Attitude Inventory is an instrument providing useful data in the screening process (Condell and Tonn, 1965; Meisgeier, 1965). Hudson's (1960) tentative checklist of teaching competencies for teachers of TMR children offers promise as a screening or evaluative device.

Connor (1961) has compiled a list of suggested considerations in the selection and preparation of personnel to teach TMRS. The teacher should be one who likes children and gains satisfaction in accomplishment when children produce small gains. The teacher should possess an optimistic outlook and the ability to set realistic goals. A sense of humor and community relation skills are considered essential. Skill in assessing children's needs and a depth of training in child growth and development are required. Connor also discusses the ability to devise materials, evaluate and redesign instructional programs, work in a multidisciplinary team and handle records.

A number of sources have listed the components of a TMR teacher preparation program (Cain and Levine, 1963; Connor and Goldberg, 1960; Council for Exceptional Children, 1966; Heber, 1963; Wolinsky, 1959). Wolinsky (1959) analyzed aspects of a teacher education program for those preparing to work with the trainable child. She recommended three areas of study to be incorporated into any such program: (a) an adequate foundation in developmental psychology, including emphasis on laboratory experiences and the case study approach, (b) acquaintance with basic skills and insights of other disciplines concerned with atypical children, (c) awareness of basic principles of counseling and interviewing.

Of particular interest is the preliminary report to the Professional Standards Committee of the Council for Exceptional Children, in which preparation of teachers of the TMR was considered separately from that of teachers of the educable mentally retarded (EMR). Areas requiring intensive attention for teachers of the TMR were: (a) cognitive growth, perception, and sensori-motor development, (b) research and evaluative skills, (c) language development, (d) concepts of leisure time, (e) occupational education, (f) counseling of parents, and (g) the role of the teacher as an eliciting stimulus.

Lance (1968) reported a pilot program under development at California State College at Fullerton to prepare teachers of the TMR. The program includes a one-semester seminar and practicum course to precede student teaching. During this seminar and practicum, the student spends three hours a week in seminar and nine hours in practicum, all under the supervision of a college faculty member. The seminar and practicum replace a separate course in curriculum and methods and attempts to cover the same material in a more integrated and meaningful fashion.

Giguere (1967) conducted a survey of public school teachers of the trainable classes and "other informed persons" on the elements felt necessary for inclusion in the training program of a TMR teachers. Specific competencies listed were: (1) A grasp of the historical aspects of public school programs for TMRs in respect to philosophical rationale and financial-administrative structure. This should include knowledge of resources and legal provisions for care, treatment and education of the TMR. (2) A thorough grounding in patterns of child growth and development with deviation patterns associated with common diagnostic types of TMR children. (3) Training in individual design of curriculum to meet individual needs of students, a clinical approach to teaching. (4) Counseling skill to facilitate the teacher's relationships with resource personnel, families of TMRs and the child himself. Included in this should be a skill in public relations activities to relate the TMR program to the life of the community. (5) Evaluation and research skill should include the ability to apply research findings to classroom planning. (6) An understanding of the TMR child's relation to society and its impact on him, as well as the impact of the child on his family and the community.

Giguere's survey also recommended guidelines for a teacher training program for teachers of the TMR. These were: 1) Admission standards should be as rigorous as for other branches of teacher training. 2) The TMR teacher should have a grounding in liberal arts curriculum and foundations of education (there was a trend to recommend a five year program in the collected data).

3) The curriculum should emphasize growth and development, and multi-disciplinary approaches to child study and teaching. 4) An integration of theory and practice should be provided with an emphasis of clinical-diagnostic approaches to the education of TMRs. 5) Teacher preparation programs should be systematically designed and an organized expansion planned within states and regions.

Teacher Characteristics.

There have been a few studies reported which dealt with the relationship between personality characteristics and a career choice in special education or teaching trainable retardates.

The relationship between personality traits and the choice of a career in Special Education in general was investigated by Gottfried and Jones (1964), Philippus (1961), and Roberts (1962)

In a questionnaire designed to pick up background factors related to selection of a career in special education, Gottfried and Jones (1964) found that the most frequently stated reasons for entering and field were: (a) previous contact with exceptional challenge, (b) a desire to help others and (c) the challenge of the work.

Connor and Goldberg (1960) surveyed teachers to determine the personal attributes most needed to teach trainable youngsters. Characteristics deemed most important were: patience, good mental health, ingenuity and creativity, sense of humor, sensitivity, physical fitness and stamina.

Phillipus investigated the personality, values and interest patterns of sixty student teachers in both regular and special education by means of five objective questionnaire type tests. There were significant differences between the means of six of the variables when the special education group was compared with the group enrolled in elementary education. The special education group scored higher on biological science, persuasive, linguistic and humanitarian scales of the Thurstone Interest Inventory. They were also higher on the debonair sexual and general uninhibitedness scales of the IPTA Humor; and on the religious scale of the Scale of Values.

Roberts (1962) used the Edwards Personal Preference Schedule, the Thurstone Interest Schedule and the Scale of Values to investigate personality variables in elementary, secondary and special education teachers. This data deals with experienced teachers and extends the results obtained by Philippus on student teachers. The special education teachers scored significantly higher on nurturance needs and computation interests. They were lower than general education teachers on linguistic interests and political values. Special education teachers scored higher than elementary teachers on biological science interests though the difference was not significant. Generalization from Roberts study should be cautious as his sample was not randomly selected and so may not be representative of a population of special and general education teachers.

Purcell (1955) reported that of 39 TMR teachers taking the Kuder Preference Record the group median was at the 92nd percentile in measured interest of Social Service. The group fell in the 60th percentile in the Musical category, 55th percentile in the Artistic category and 50th percentile in the Literary category.

Rich (1960), studied the status of teachers of the educable mentally retarted school population. This study reported that 62 percent of the teachers were prompted to teach MR children because the work was a challenge. Both teachers and administrators stated that they considered genuine interest in the retarded and good emotional stability important qualities in an MR teacher. Rich also investigated reasons teachers left the field. They reported discontinuing their work with retarted children because (a) they desired to return to the regular classroom, (b) they felt the work was difficult, (c) they were discouraged with the work and their obtained results and (d) they lacked the necessary emotional stability.

Heller (1964) conducted an extensive study of the relationship between selected background characteristics of special education teachers and decisions to leave the field. The teachers ranked factors which influenced their decision to discontinue teaching the retarded as follows: 1) lack of adequate supervision and administrative support, 2) undesirable working conditions, 3) lack of adequate college preparation for teaching, 4) lack of acceptance by fellow colleagues in education, 5) inability to manage the classroom, 6) lack of acceptance of special education in the community, 7) family and personal reasons, 8) economic reasons and 9) lack of stimulation. Most of these individuals chose not to leave teaching but entered regular education positions. Heller inferred that these teachers lacked the "unique characteristics for special class teaching". It is inferred from this data that persons teaching MR children should have little need for affiliation, acceptance, dependency, direction, recognition, or immediate gratification of needs. While these seem like sweeping inferences, perhaps they parallel the recommendations made by teachers in Giguere's (1967) survey on training needs for TMR teachers indicating the pressures a teacher must be able to cope with in the field.

Heryford (1964) investigated the relationship between attitudes, personality needs and general background of teachers in five state institutions, and their job performances. The areas of achievement, autonomy, dominance, nurturance and succorance as measured by the Edwards Personal Preference Schedule and their relationship to job performance were reported by this investigator.

Matteson (1962) attempted to explore the relationship between selected personal characteristics and teaching effectiveness in a study of teachers of the retarded in public school systems of seven states. Also it was felt that identification of these characteristics would be of assistance in screening potential teachers and predicting success. The important qualifications listed by this study were: (a) acceptance of the mentally retarded, (b) self direction, (c) initiative and (d) adaptability.

Semmel and Dickson (1966) investigated the connotative meaning of disability labels by measuring the responses of 457 college freshmen and seniors in elementary and special education on the Connotative Reaction Inventory. They found that special education majors viewed retardates more favorably than elementary education majors.

Semmel (1959) found that teachers of regular grades did not differ from teachers of MR children with respect to attitudes toward exceptional children. Semmel Suggested that there was a possible difference between expressed attitudes and actual behavior when interacting with handicapped children.

Meisgeier (1965) attempted to identify and quantify the traits which contribute to successful student teaching of the mentally and physically handicapped children.

Three characteristic patterns emerged. The successful student teachers were: 1) well-adjusted, emotionally stable and able to cope with difficult special class situations, 2) they possessed physical energy, vitality and enthusiasm necessary to meet special classroom demands, and 3) they obtained high scores on measures of scholastic achievement and ability.

Willman (1966) reported large differences in the basic needs, attitudes and interests of prospective special education and elementary teachers in a comparison of the two groups on the Edwards Personal Preference Schedule, The Minnesota Teacher Attitude Inventory and the Study of Values. She reported relatively small differences among education majors in the various areas of special education (e.g., mental retardation, emotional disturbance).

In summary the general approaches available to the investigator of teacher characteristics are: 1) one may survey experts in the field as to their opinion concerning needed characteristics, (2 one may survey characteristics of teachers actually in the field or entering the field, in order to make a summary statement of existing characteristics, or 3) one may survey the characteristics of teachers in the field and attempt to relate these to a measure of the teachers' success. The authors found that as yet, studies of the last two types have yielded very little objective information, and reliable conclusions which may assist in selection and training of teacher candidates were not available.

The review of the literature was accomplished by Jean Schmitt and Harolyn Van Every of the University of Michigan.

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DEMOGRAPHIC VARIABLES

DEMOGRAPHIC VARIABLES FOR TEACHERS AND TMR PUPILS

Wayne County is a large, highly urbanized area in the Southeastern part of the state of Michigan. The school districts in the County range in size from 97 to 291,987 students and in state equalized assessed valuation from $4,851 to $80,913 per child. Its potential as a research site is enhanced by the availability of the vast number and variety of school programs for Trainable Mentally Retarded (TMR) children. The programs are operated by both public school districts and private parents' groups, such as Detroit Association for Retarded Children, Ray Battle Training Center, and the George T. Martin School. The purposes and projected activities of the study were discussed with both public and private school administrations and their permission and cooperation was obtained.

A sample of classroom teachers of TMR children in Wayne County were selected for inclusion in the study. All children in the study were enrolled in public or private Special Education programs and were classified as TMR. By authority of Public Act 312, (1957) in the state of Michigan a child may be classified as trainable mentally retarded only after he has received a thorough and adequate diagnostic study by a state certified diagnostician and it is ascertained that he meets the criteria as stated in the definition of a TMR child.

In the Fall of 1965 demographic data were available for 86 teachers and 979 children in the Wayne County Schools. While the number of teachers and TMR children varied over the three year period of the study, biographic data are reported for the 1965 TMR population (see Table 1).

The Statistical Problem Oriented Syntactic Encoder (SPOSE) program (Johnson, 1966) available through the University of Michigan Computing Center, Ann Arbor, Michigan was used to summarize the demographic information on teachers and children. The program was designed to expedite the complex task of processing survey research data on large populations. The statistical analyses of the SPOSE program involved the transformation of raw

TABLE 1

Descriptive Data on the Total Population of Trainable Mentally Retarded Children for the Three Year Period of the Study

Year	CA *				IQ **			
Subjects	N	Mean	SD	Range	N	Mean	SD	Range
1965								
No Response	10	--	--	--	89	--	--	--
Males	583	11-4	44	5-9 to 30-3	539	44.76	9.10	13-78
Females	386	11-8	47	5-2 to 30-10	351	43.45	8.97	15-69
Total	979	11-6	45	5-2 to 30-10	979	44.25	9.07	13-78
1966								
Males	475	12-6	44	5-10 to 31-3	440	44.13	8.77	19-78
Females	310	12-8	47	6-2 to 37-7	277	43.31	9.03	15-69
Total	785	12-6	46	5-10 to 37-7	717	43.81	8.88	15-78
1967								
Males	394	12-10	41	6-7 to 32-0	366	44.09	8.53	19-76
Females	263	12-11	44	6-8 to 32-4	235	43.35	9.13	15-69
Total	657	12-11	42	6-7 to 32-4	601	43.80	8.77	15-76

* CA - SD in months

** IQ based on individual intelligence tests data into multivariate frequency tables of percentages. Computer printout from the SPOSE program produced the frequencies and percentages of males and females in the study population, derived from various levels of the demographic data.

The TMR Teachers in the Study

Because the survey questionnaire (See Appendix A) administered to the 86 TMR teachers resulted in a relatively large body of demographic data, it was deemed necessary to summarize the data according to the following categories: (a) teachers' personal characteristics; (b) teachers' professional training and experience; (c) teachers' opinions and perceptions; (d) teachers' selection of goals for TMR children.

The format adopted for characterizing the teachers in the study describes the highest percentage of the total population that falls within a given category. Initially, the teacher population was dichotomized by sex and it was noted that there were only nine males in the population. Because of this disproportionate N, it was decided that comparisons between male and female teachers were not justified. Hence, only characteristics for the total teacher population are reported.

The information obtained relative to the teachers' personal characteristics is reported in Table 2. A majority of the 86 teachers (68.60%) indicated they were married. Half of the spouses of the 59 married teachers (50.85%) were employed in the professional and technical occupations. Of the 68 married, widowed, or divorced teachers, a third (33.83%) reported having no children; an additional third (32.35%) reported 1-2 children. The areas of music, arts, and crafts were the teacher interests and activities listed by the highest percentage of teachers (24.42%). Prior job placements held by the teachers, other than teaching, were divided into direct and non-direct service jobs. A direct service job was designated as one in which the largest amount of an individual's time was spent in direct contact with the public, i.e., salesman. Half of the 86 teachers (46.51%) reported having prior experiences in a direct service job.

TABLE 2

Summary of Teachers' Personal Characteristics

Variable	Total Frequency	Percentage of Total Population
Sex		
Males	9	10.47
Females	77	89.53
Total	86	100.00
Marital Status		
Single	18	20.93
Married	59	68.60
Other	9	10.47
Total	86	100.00
Occupational Categories of Teacher Spouses		
Professional, Technical	30	50.85
Managers, Officials, etc.	7	11.86
Clerical, Sales Workers	6	10.17
Craftsmen, Foremen, etc.	2	3.39
Factory Workers, Laborers	7	11.86
Service Workers	3	3.39
Student	4	6.78
Total Number of Married Teachers	59	100.00
Number of Children in Immediate Family		
No Response	2	2.94
1-2 Children	22	32.35
3-4 Children	17	25.00
5 or More Children	4	5.88
No Children	23	33.83
Total Number of Married, Widowed, Divorced Teachers	68	100.00

TABLE 2

Summary of Teachers' Personal Characteristics

Variable	Total Frequency	Percentage of Total Population
Types of Activities and Interests		
No Response	3	3.49
Sports and Outdoor Activities	13	15.12
Music, Arts, and Crafts	21	24.42
Home, Gardening, and Entertaining	11	12.79
Youth Work	11	12.79
Professional and Social Organizations (Church)	16	18.61
Reading, Writing, Traveling	11	12.79
Total	86	100.00
Type of Previous Jobs Held (Other than Teaching)		
No Response	5	5.81
No Other Jobs	9	10.47
Some Direct-service Jobs	40	46.51
No Direct-service Jobs	32	37.21
Total	86	100.00
Type of Occupation Chosen when Given Complete Freedom of Vocational Choice		
No Response	5	5.81
Professional, Service Occupation	19	22.09
Non-professional, Service Occupation	4	4.65

TABLE 2

Summary of Teachers' Personal Characteristics

Variable	Total Frequency	Percentage of Total Population
Non-professional, Non-Service Occupation	2	2.33
No Other Occupation Chosen	56	65.12
Total	86	100.00
Factors Influencing Choice of Teaching as a Career		
No Response	9	10.47
Childhood Goal or Expectations of Parents	5	5.82
Influence of Friends, Relatives	24	27.91
Interest in and a Desire to Work with Children	28	32.56
Previous Experience with Children and the Need for Teachers	9	10.46
Flexibility and Financial Security within the Profession	8	9.30
Other	3	3.49
Total	86	100.00
Age Decided to Become a Teacher		
No Response	9	10.47
0-19 Years	38	44.19
20-29 Years	25	29.07
30-49 Years	14	16.27
Total	86	100.00

TABLE 2

Summary of Teachers' Personal Characteristics

Variable	Total Frequency	Percentage of Total Population
Year Began Teaching		
1920-1929	3	3.49
1930-1939	8	9.30
1940-1949	7	8.14
1950-1959	26	30.23
1960-1966	42	48.84
Total	86	100.00
Personal Relationship to Mentally Retarded Children (Other Than Classroom Relationship)		
No Other Relationship	63	73.26
Immediate Family	6	6.98
Non-immediate Family, (i.e., Cousin, etc.)	8	9.30
Non-family	9	10.47
Total	86	100.00
Length of Time in a Non-Teaching Role Due to Illness, Raising a Family, Other Jobs, etc.		
No Response	29	33.72
3 Months - 1 Year	32	27.21
1-3 Years	4	4.65
3-5 Years	7	8.14
More Than 5 Years	14	16.28
Total	86	100.00

The teachers were given the condition of complete freedom of vocational choice and then asked to designate their occupational preference. A majority of the teachers (65.12%) chose no other occupation, thus, indicating their preference for the teaching profession. The second largest category chosen (22.09%) was that containing the professional, service occupations, i.e., nurse, social worker, etc. Factors influential in the teachers' choice of teaching as a career were also obtained via the questionnaire. A third of the population (32.56%) stated that an interest in and a desire to work with children were the main influential factors in their choice of teaching. It may be noted that a small percentage of teachers (9.30%) chose a career in teaching due primarily to the flexibility and financial security within the profession.

The largest percentage of teachers (44.19%) indicated their selection of the teaching occupation was decided upon prior to reaching the age of nineteen. Half of the 86 teachers (48.84%) reported they began their teaching career during the 1960-1966 period. Results from the questionnaire indicated that over two-thirds of the teachers (73.26%) have no personal relationship, other than in the classroom, with retarded children. Teacher responses to the question concerning the length of time spent away from teaching indicated that one fourth of the teachers (27.21%) have spent less than a year in a non-teaching role. Of the 14 teachers reporting an absence of five or more years from teaching, a majority stated their absence was a result of raising a family.

One of the main purposes of the questionnaire was to obtain information on the professional training and teaching experiences of the TMR teachers in the study. Table 3 contains a summary of this data. Although a majority of the 86 teachers (91.86%) indicated they had received a college degree, a fourth (28.07%) of the population were not certified to teach. A summarization of the percentage data on the student teaching experiences of the TMR teachers suggested the following trend: (a) half of the teachers possessed an Elementary Provisional (30.23%) or Elementary

TABLE 3

Summary of Teachers' Professional Training and Experience

Variable	Total Frequency	Percentage of Total Population
Professional Training		
Some College, No Degree	7	8.14
College Degree	18	20.93
Some Graduate Work, No Degree	42	48.84
Master's Degree	9	10.46
Post-Master's Work, No Ph. D.	10	11.63
Total	86	100.00
Type of Certification Held		
Elem. Provisional, M. R.	26	30.23
Elem. Provisional, Other	3	3.49
Elem. Permanent, M. R.	18	20.93
Elem. Permanent, Other	7	8.14
Second. Provisional, Other	5	5.81
Second. Permanent, Other	2	2.33
Uncertified	25	28.07
Total	86	100.00
Student Teaching Experience in Mental Retardation		
No Student Teaching	71	82.56
Primary	1	1.16
Level Unknown	8	9.30
More than One Level or Area	6	6.98
Total	86	100.00
Student Teaching Experience with Exceptional Children, (Other than Retarded)		
No Student Teaching	79	91.86
Level Unknown	3	3.49
More than One Level or Area	4	4.65
Total	86	100.00

TABLE 3

Summary of Teachers' Professional Training and Experience

Variable	Total Frequency	Percentage of Total Population
Student Teaching Experience in Regular Education		
No Student Teaching	24	27.90
Primary	35	40.70
Intermediate	6	6.98
Secondary	4	4.65
Level Unknown or More Than One Level	17	19.77
Total	86	100.00
Total Number of Years Teaching Experience		
0-4 Years	46	53.49
5-9 Years	21	24.42
10-19 Years	11	12.79
20-34 Years	8	9.30
Total	86	100.00
Total Number of Years Teaching TMR Children		
1-2 Years	67	77.90
3-4 Years	14	16.29
5-6 Years	2	2.33
7-12 Years	3	3.48
Total	86	100.00
Total Number of Years Teaching EMR Children		
No Experience	60	69.76
1-2 Years	11	12.79
3-4 Years	9	10.47
5-6 Years	2	2.33
7-16 Years	4	4.65
Total	86	100.00

TABLE 3

Summary of Teachers' Professional Training and Experience

Variable	Total Frequency	Percentage of Total Population
Total Number of Years Teaching Other Types of Children		
No Experience	37	43.02
1-4 Years	24	27.91
5-9 Years	14	16.28
10-19 Years	8	9.30
20 or More Years	3	3.49
Total	86	100.00
Areas of Teaching Experience With Other Types of Children		
No Experience	37	43.02
Normal-Average	44	51.16
Other (i.e., Orthopedic, Cerebral Palsy, etc.)	5	5.82
Total	86	100.00

Permanent (20.93%) Certificate, with certification in Mental Retardation; (b) a fourth of the teachers (25.58%) have completed student teaching experiences with retarded or other types of exceptional children; (c) a majority of the teachers (72.10%) have completed a student teaching experience in regular education. Only 15 teachers indicated they had student taught in the area of the retarded.

Summarization of the data received on the teaching experiences suggested the following trends in the teacher population: (a) half of the teachers (53.49%) have completed less than five years of teaching; (b) a large percentage of the teachers (77.90%) have taught TMR children for two years or less; (c) a majority of the teachers (69.76%) have had no teaching experience with Educable Retarded children; (d) half of the teachers (51.16%) have had teaching experience with normal or regular children.

The results of teacher responses to a variety of opinion and perception questions are reported in Table 4. The teachers were asked to indicate the type of child and the grade level they preferred to teach. The majority of teachers indicated a preference for teaching TMR children (75.58%) at the preschool through elementary levels (79.08%).

Teacher perceptions of the number of hours a week the average TMR teacher spends in outside preparation for class were also obtained. The largest percentage of teachers (38.37%) reported their perception was 5-9 hours of outside preparation. A fourth of the teachers (25.58%) indicated that behavior problems and lack of child responses were factors in their classroom that were particularly disturbing. Three teachers indicated they were not disturbed by events occuring in the classroom.

The teachers were asked to respond to open-ended questions designed to ascertain the greatest assets and shortcomings of a TMR teacher. The results from these questions were subjected to content analysis and grouped on the basis of similarity. Half of the teachers (45.35%) indicated that the personality characteristics

TABLE 4

Summary of Teachers' Opinions and Perceptions

Variable	Total Frequency	Percentage of Total Population
Type of Child Teachers Prefer to Teach		
No Response	5	5.81
Trainable Mentally Retarded	65	75.58
Educable Mentally Retarded	8	9.30
Normal-Average	6	6.98
Gifted	2	2.33
Total	86	100.00
Grade Level Teachers Prefer to Teach		
No Response	5	5.81
Pre-School through Later Elementary	68	79.08
Junior-Senior High (7-12)	7	8.15
College	6	6.98
Total	86	100.00
Perception of Number of Hours a Week Average TMR Teacher Spends in Preparation for Class		
No Response	8	9.30
0-4 Hours	3	3.49
5-9 Hours	33	38.37
10-14 Hours	23	26.74
15 Hours or More	19	22.10
Total	86	100.00
Factors in the Classroom That are Particularly Disturbing		
No Response	13	15.12
Noise and Confusion	12	13.95
Non-Teaching Duties and Outside Interruptions	12	13.95

TABLE 4

Summary of Teachers' Opinions and Perceptions

Variable	Total Frequency	Percentage of Total Population
Lack of Facilities, Supplies	7	8.14
Behavior Problems, Lack of Child Responses	22	25.58
Supervisory Decisions Beyond Teacher's Control	5	5.81
Self Doubts Concerning Teaching Ability	7	8.14
Nothing Disturbs Me	3	3.49
Other	5	5.81
Total	86	100.00
Perception of Greatest Asset of TMR Teacher		
Personality: Patience; Calmness; Sense of Humor	39	45.35
Creativity, Competence, Perception	14	16.28
Understanding of TMR Child	14	16.28
Interest, Dedication, Respect of TMR Child	13	15.12
Other	6	6.97
Total	86	100.00
Perception of Most Serious Shortcoming of TMR Teacher		
No Response	6	6.98
Frustration, Lack of Patience, Loss of Temper	24	27.91
Lack of Objectivity, Over-Expectation Re: Pupil Progress	22	25.58
Lack of Preparation and Understanding (Theoretical)	16	18.60

TABLE 4

Summary of Teachers' Opinions and Perceptions

Variable	Total Frequency	Percentage of Total Population
Lack of Adequate Training Program	7	8.14
Lack of Interest, Love and Ability to relate to TMR Child	5	5.81
Other	6	6.98
Total	86	100.00

of patience, calmness, and a sense of humor were the greatest assets of a TMR teacher. Results indicating the greatest shortcomings of a TMR teacher were divided among the following two areas: (a) teacher's frustration, lack of patience and loss of temper (27.91%); (b) teacher's lack of objectivity and over-expectation regarding pupil progress (25.58%).

During the Fall of 1965 all teachers were requested to list five goals they hoped to achieve with TMR children. The frequency of percentage of pre and postgoal selections were tabulated for the 57 teachers present during the two years of the study in order to examine if any change in goal emphasis had taken place. The six pre and postgoals that received the highest percentage of teacher selections are reported in Table 5.

An examination of the highest ranking pre-post goal selections suggested that teachers emphasized the development of social skills ability in TMR children over the two year period. The goals of social skills and independence each received an equal percentage of teacher selections during the pregoal period, i.e., 17.19%. Observation of the rank order selection of the remaining goals indicated a change in teacher emphasis during the study. If it is assumed that the teachers' goal selections corresponded to the areas they emphasized in the classroom, then the goals of independence, emotional maturity, cognitive development, occupational training, and academic skills received a majority of the teachers' emphasis during the pregoal period; while the goals of leisure-time activities, motor and sensory development, personal appearance, home life and community received a majority of the teachers' emphasis during the postgoal period.

The TMR Pupils in the Study

Teachers were requested to complete survey questionnaires (See Appendix B) on the TMR pupils in their classrooms during the 1965 school year. A summation of the data is reported according to the following categories: (a) childrens' personal characteristics; (b) family characteristics of TMR children;

TABLE 5

Major Pre and Postgoals Selected by 57 TMR Teachers

Variable	Frequency of Response	Percentage of Total Responses
PRE GOALS		
Social Skills	49	17.19
Independence	49	17.19
Emotional Maturity	45	15.79
Cognitive Development	29	10.18
Occupational Training	16	5.61
Academic Skills	16	5.61
POST GOALS		
Social Skills	45	15.79
Leisure-Time Activities	37	12.98
Motor and Sensory Development	37	12.98
Personal Appearance	36	12.63
Home Life and Community	31	10.88

Total Number of Teachers	57
Total Number of Responses	285

(c) best and least-liked characteristics of TMR children. The general format adopted for reducing the demographic data on children describes the highest percentage of the total population that falls within a given category. This format varies depending upon the type of information reported. Because of the high percentage of "No Response" in the data reported in this section, the results should be interpreted only as an indication of possible trends in the child population.

Summary information on the personal characteristics of the 979 TMR children in the 1965 population is reported in Table 6. A third of the children (33.71%), including the highest percentage of males and females, were reported to have IQ scores within the 40 - 49 IQ interval. The percentage distribution of the types of deficiencies in the total population indicated a higher percentage of Mongoloid (21.76%) children, as compared to Brain-injured children (10.62%). Of the 510 secondary disabilities reported, the areas of highest incidence were visual irregularities (46.27%) and motor disabilities (41.38%). It should be noted that 76 children, including 47 males and 29 females, were reported to have multiple secondary disabilities.

The majority of TMR children (91.01%) possessed the ability to speak in an understandable manner, as measured by the perception of the classroom teacher. The incidence of twins in the population was 2.76%. Information on the number of years the children were present in the Wayne County program, prior to September, 1965, indicated that a majority (83.35%) were enrolled for less than two years.

Table 7 contains summary information on the family characteristics of the TMR population. Analysis of data, vis a vis males and females, indicated a similar percentage of children reporting younger and older siblings. Over half of the child population (61.59%) indicated there were no other retarded children in their immediate family.

TABLE 6

Summary of Children's Personal Characteristics

Variable	Frequency			Percentage		
	M[(a)]	F[(b)]	Total	M[(a)]	F[(a)]	Total
Sex	592	387	979	60.37	39.63	100.00
IQ Level						
No Response	53	36	89	8.95	9.30	9.09
Below 29	8	8	16	1.35	2.07	1.64
30-39	148	123	271	25.00	31.78	27.68
40-49	207	123	330	34.97	31.78	33.71
50-59	158	82	240	26.69	21.19	24.51
Above 60	18	15	33	3.04	3.88	3.37
Total	592	387	979	100.00	100.00	100.00
Type of Deficiency						
No Response	209	135	344	35.30	34.88	35.14
Mongoloid	105	108	213	17.74	27.92	21.76
Brain-injured	76	28	104	12.84	7.23	10.62
Other	202	116	318	34.12	29.97	32.48
Total	592	387	979	100.00	100.00	100.00

TABLE 6

Summary of Children's Personal Characteristics

Variable	Frequency			Percentage		
	M(a)	F(b)	Total	M(a)	F(a)	Total
Type and Frequency of Secondary Disability						
Visual	144	92	236	46.30	46.23	46.27
Auditory	31	32	63	9.97	16.08	12.35
Motor	136	75	211	43.73	37.69	41.38
Total Disabilities	311	199	510	100.00	100.00	100.00
Ability to Speak						
No Response	14	8	22	2.37	2.07	2.25
Child Does Speak	543	348	891	91.72	89.92	91.01
Child Does Not Speak	35	31	66	6.91	8.01	6.74
Total	592	387	979	100.00	100.00	100.00
Number of Twins						
No Response	243	164	407	41.05	42.38	41.57
Child is a Twin	20	7	27	3.38	1.81	2.76
Child is not a Twin	329	216	545	55.57	55.81	55.67
Total	592	387	979	100.00	100.00	100.00

TABLE 6

Summary of Children's Personal Characteristics

Variable	Frequency			Percentage		
	M [a]	F [b]	Total	M [a]	F [a]	Total
Number of Years in Wayne County Program						
No Response	10	17	27	1.69	4.39	2.76
0-2 Years	502	314	816	84.80	81.14	83.35
3-5 Years	61	42	103	10.30	10.84	10.51
5 or More Years	19	14	33	3.21	3.63	3.38
Total	592	387	979	100.00	100.00	100.00

(a) M indicates males TMR pupils
(b) F indicates females TMR pupils

TABLE 7

Summary of Family Characteristics of Trainable Mentally Retarded

Variable	Frequency			Percentage		
	M	F	Total	M	F	Total
Number of Younger Siblings						
No Response	162	112	274	27.36	28.94	27.99
No Younger Siblings	145	96	241	24.49	24.81	24.61
1-2 Younger	206	130	336	34.81	43.59	34.33
3-4 Siblings	68	34	102	11.48	8.79	10.41
5 or More	11	15	26	1.86	3.87	2.66
Total	592	387	979	100.00	100.00	100.00
Number of Older Siblings						
No Response	159	109	268	26.86	28.17	27.37
None	104	68	172	17.56	17.57	17.58
1-2	221	128	349	37.34	33.08	35.65
3-4	78	59	137	13.17	15.24	13.99
5 or More	30	23	53	5.07	5.94	5.41
Total	592	387	979	100.00	100.00	100.00

TABLE 7

Summary of Family Characteristics of Trainable Mentally Retarded

Variable	Frequency			Percentage		
	M	F	Total	M	F	Total
Presence of Other Retardates in the Family						
No Response	137	101	238	23.14	26.10	24.31
No Other Retardates	362	241	603	61.15	62.27	61.59
Other Retardates in Immediate Family	81	38	119	13.68	9.82	12.16
Other Retardates in Non-immediate Family	12	7	19	2.03	1.81	1.94
Total						
Mother's Age						
No Response	176	123	299	29.73	31.78	30.54
20-29 Years	40	27	67	6.77	6.98	6.84
30-39 Years	205	117	322	34.62	30.23	32.89
40-49 Years	144	83	227	24.32	21.45	23.19
50-59 Years	21	33	54	3.55	8.53	5.52
60 Years or More	6	4	10	1.01	1.03	1.02
Total	592	387	979	100.00	100.00	100.00

TABLE 7

Summary of Family Characteristics of Trainable Mentally Retarded

Variable	Frequency			Percentage		
	M	F	Total	M	F	Total
Father's Age						
No Response	213	160	373	35.98	41.34	38.10
20-29 Years	21	12	33	3.55	3.10	3.37
30-39 Years	158	86	244	26.69	22.22	24.92
40-49 Years	148	80	228	25.00	20.67	23.29
50-59 Years	39	40	79	6.59	10.34	8.07
60 Years or More	13	9	22	2.19	2.33	2.25
Total	592	387	979	100.00	100.00	100.00
Mother's Educational Level						
No Response	242	153	395	40.88	39.53	40.35
No High School Diploma	157	120	277	26.52	31.01	28.30
High School Diploma or Some College	178	110	288	30.07	28.43	29.41
College Degree or Some Graduate School	15	4	19	2.53	1.03	1.94
Total	592	387	979	100.00	100.00	100.00

TABLE 7

Summary of Family Characteristics of Trainable Mentally Retarded

Variable	Frequency			Percentage		
	M	F	Total	M	F	Total
Father's Educational Level						
No Response	252	152	404	42.57	39.27	41.26
No High School Diploma	156	119	275	26.34	30.74	28.07
High School Diploma or Some College	164	105	269	27.71	27.14	27.47
College Degree or Some Graduate School	18	9	27	3.04	2.33	2.80
Graduate Degree	2	2	4	.34	.52	.40
Total	592	387	979	100.00	100.00	100.00
Mother's Occupational Level						
No Response	119	84	203	20.10	21.70	20.73
Professional Worker	10	3	13	1.69	.77	1.33
Managers, Officials	2	1	3	.34	.26	.31
Clerical, Sales	32	16	48	5.41	4.13	4.90
Craftsmen, Foremen	0	2	2	.00	.52	.20

TABLE 7

Summary of Family Characteristics of Trainable Mentally Retarded

Variable	Frequency			Percentage		
	M	F	Total	M	F	Total
Factory Workers, Laborers	13	4	17	2.20	1.03	1.74
Housewife	357	237	594	60.30	61.24	60.67
Service Workers	33	19	52	5.57	4.92	5.32
Student	2	0	2	.34	.00	.20
Unemployed	24	21	45	4.05	5.43	4.60
Total	592	387	979	100.00	100.00	100.00
Father's Occupational Level						
No Response	107	91	198	18.07	23.51	20.22
Professional	57	31	88	9.63	8.01	8.99
Managersm Officials	36	21	57	6.08	5.43	5.82
Clerical, Sales	25	13	38	4.22	3.36	3.88
Craftsmen, Foremen	88	67	155	14.87	17.31	15.84
Factory Workers, Laborers	229	133	362	38.68	34.37	36.97
Service Workers	19	8	27	3.21	2.07	2.77
Student	2	0	2	.34	.00	.20

TABLE 7

Summary of Family Characteristics of Trainable Mentally Retarded

Variable	Frequency			Percentage		
	M	F	Total	M	F	Total
Unemployed	29	23	52	4.90	5.94	5.31
Total	592	387	979	100.00	100.00	100.00
Parental Reaction to Previous Program						
No Response	328	217	545	55.41	56.07	55.66
Parents Found Previous Program Satisfactory	174	96	270	29.39	24.81	27.60
Parents Did Not Find Previous Program Satisfactory	25	26	51	4.22	6.72	5.21
Child was Not in a Previous Program	65	48	113	10.98	12.40	11.53
Total	592	387	979	100.00	100.00	100.00

The classroom teachers were also asked to record demographic information on the parents of the children in the study. Results from the data obtained in the Fall of 1965 indicated the highest percentage of fathers (48.21%) were in the 30 - 49 age range. The information available on the parents' educational level indicated a fourth of the mothers (29.41%) and a fourth of the fathers (27.47%) had received a high school diploma.

The Alphabetical Index of Occupations and Industries, U.S. Bureau of the Census (1960) was used to code the parents' occupational data into category levels. A majority of the mothers (60.67%) were reported to be housewives. The second largest occupational category reported for mothers (5.32%) was that of service workers, e.g. waitress. The highest percentage of fathers were reported in the occupational categories of laborers (29.11%) and craftsmen or foremen (15.74%). Additional information obtained in the survey indicated that 270 parents were satisfied with the previous programs in which their child was enrolled.

In order to obtain information on the teachers' opinions of TMR children, all teachers in the study during the 1965 school year were asked to list three best-liked and three least-liked characteristics for each child in their class. The teacher responses were then subjected to content analysis similar to that performed on the teacher pregoals and were grouped into corresponding categories. The six best-liked and six least-liked characteristics that received the highest percentage of teacher responses are reported in Table 8. Observation of the results indicated a similarity between the percentage distribution of best and least-liked characteristics among males and females. A further analysis of the selections indicated that classroom teachers tended to regard the development of social skills and emotional maturity as high, positive characteristics in male (43.02%) and female (41.17%) TMR children. It may also be noted that a similarity existed between the best and least-liked child characteristics (e.g. social skills and emotional maturity) and the selection of pregoals emphasized by 57 teachers (See Table 5).

TABLE 8

Teachers' Selection of Best-Liked and Least-Liked Characteristics of TMR Children

Variable	Males		Females	
	Freq.	%	Freq.	%
Motor and Sensory Development	70	3.94	47	4.06
Social Skills	69	3.88	41	3.53
Home Life and Community (a)	44	2.48	35	3.01
Total number of responses				

(a) Personal appearance was the characteristic selected for females.

TABLE 8

Teachers' Selection of Best-Liked and Least Liked Characteristics of TMR Children

Variable	Males Freq.	Males %	Females Freq.	Females %
Best-Liked				
Social Skills	482	27.14	289	24.89
Emotional Maturity	458	25.79	305	26.28
Interest in Learning	240	13.52	135	11.63
Personal Appearance	117	6.59	101	8.70
Independence	72	4.05	74	6.37
Cognitive Development	68	3.83	44	3.79
Total number of responses				
Least-Liked				
Emotional Maturity	764	43.02	478	41.17
Cognitive Development	187	10.53	132	11.38
Independence	111	6.26	72	6.20

SUMMARY

Data obtained from a survey administered to a population of 86 teachers and 979 TMR children was subjected to an analysis involving a Statistical Problem Oriented Syntactic Encoder (SPOSE) program available through the University of Michigan Computing Center for the IBM 360:67 Computer. The results of the major characteristics of the population are summarized below.

Teachers' Personal Characteristics

A majority of the teachers in the study were married and their spouses were employed either in a professional or technical occupation. A high percentage of the teachers indicated they had a preference for the teaching profession and that their decision to become a teacher was made prior to reaching the age of nineteen. The major reason given for their selection of teaching as a career was an interest in and a desire to work with children. In addition, a large percentage of the teachers indicated that they did not have any personal relationship, other than a classroom relationship, with retarded children.

Teachers' Professional Training and Experiences

Although most of the teachers in the study had received a college degree, over a fourth of them indicated they were not certified to teach. Generally, the teachers appeared to have only limited experiences with the type of children they were teaching, in that a large percentage had not received student teaching experiences with retarded children and had taught TMR children for two years or less.

Teachers' Opinions and Perceptions

A majority of the 86 teachers stated a preference for teaching TMR children at the preschool through elementary levels and felt they were particularly disturbed by behavior problems and lack of responses from the children. The information available on the greatest assets and shortcomings of a TMR teacher indicated that the possession of patience, calmness and a sense of humor were viewed as the greatest assets; while a lack of patience, frustration, loss of one's temper, lack of objectivity, and over-expectations regarding pupil progress were viewed as the greatest shortcomings.

Teachers' Selection of Goals for TMR Children

During the beginning of the study, and again at its conclusion, all teachers were requested to indicate the goals they hoped to achieve with their TMR pupils. A comparison of the pre and postgoals revealed that the teachers emphasized the development of social skills abilities throughout the two year period. An analysis of the rank-order of pre and postgoal selections has indicated a change in the types of goals that were emphasized during the study. During the pregoal period the teachers emphasized the development of independence, emotional maturity, cognitive development, and academic skills; whereas, during the postgoal period the teachers emphasized the development of leisure-time activities, motor and sensory development, personal appearance and home, life and community responsibilities.

Pupils' Personal Characteristics

A summary of the information obtained on the 979 TMR pupils revealed that the highest percentage of pupils scored in the 40-49 IQ range and were judged as capable of performing intelligible speech. An analysis of the percentage distribution of the types of deficiencies in the total population indicated a higher percentage of Mongoloid pupils, as compared to Brain-injured pupils. The largest percentage of the pupils were enrolled in Wayne County programs for two years or less, prior to the beginning of the study.

Family Characteristics of TMR Pupils

An analysis of the survey data on the family characteristics of the TMR pupils revealed that over half of the population indicated that there were no other retarded children in their immediate family. Although the demographic information that was received on the parents of the TMR pupils was incomplete, an analysis of the available data indicated that the highest percentage of mothers were housewives and that the highest percentage of fathers were employed as factory workers, laborers, craftsmen or foremen.

Best and Least-Liked Characteristics of TMR Children

During the study all classroom teachers were requested to list three best-liked and three least-liked characteristics for each TMR child in their classes. These responses were then subjected to an item analysis and information on the best and least-liked characteristics of TMR pupils was obtained. The results indicated that classroom teachers tended to regard the development of social skills and emotional maturity as the best-liked characteristics for both male and female TMR pupils.

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SEARCH PROGRAM FOR GROUP DIFFERENCES

THE DETAILED REPORTING OF THE COMPUTER SEARCH PROGRAM FOR GROUP DIFFERENCES CAUSES THE SECTION TO BE LENGTHY AND, AT TIMES, REDUNDANT. IT WAS THE WRITER'S DECISION TO INCLUDE IT SINCE THE DATA PROCESS WAS NOT WELL KNOWN.

SEARCH PROGRAM FOR GROUP DIFFERENCES

The central focus of this investigation was to explore and uncover significant teacher variables that relate to growth among trainable mentally retarded (TMR) children in special classes. The study was exploratory in that no prevailing theory or empirical literature could be found which led to an intensive study of specific variables or combinations of variables. Further, little or no basis appeared to exist for positing a specific set of research hypotheses of an *a priori* nature. It appeared reasonable to contend that if teacher variables are related to the growth of TMR pupils, then a systematic method for the identification of these variables had to be determined. The intent of this chapter is to report the results of a procedure in which the computer was used to examine a myriad of teacher characteristics and to hypothesize those variables that have the highest probability of being associated with growth of TMR children in special classes.

TEACHER VARIABLES

A large pool of teacher variables was obtained through the use of instruments designed to measure attitudes, personality characteristics, and biographical information of the teachers of TMR children involved in the study:

Attitudes: Teacher attitudes were measured through the use of two instruments: The Minnesota Teacher Attitude Inventory (MTAI) and the Student Attitude Questionnaire (SAQ). The MTAI measured "those attitudes of a teacher which predict how well he will get along with the pupils in interpersonal relationships" (Cook, Leeds, and Callis, 1951). The SAQ (Semmel and Dickson, 1967) is designed to uncover teacher attitudes toward normal and handicapped persons in different described social contexts.

Personality: Personality characteristics were collected through the use of the Edwards Personal Preference Schedule (EPPS, 1959). The personality variables the EPPS measured were: achievement, deference, order, exhibition, autonomy, affiliation, intraception, succorance, dominance, abasement, nurturance, change, endurance, heterosexuality, and aggression.

Biographical Information: Biographical information was obtained through the use of a Teacher Information Form (TIF; see Appendix A). The TIF provided personal and general information as well as data on the training and experience of the teachers.

The data on attitudes, personality, and biographical information combined to form a large data pool of teacher variables. Once the data pool was obtained, the problem was to choose from the pool those variables which had the most significance when pupil growth in special classes was considered. Figure I illustrates the model that guided the selection and collection of the teacher variables.

CRITERIA FOR PUPIL GROWTH

Growth of the TMR students in special classes was determined by the administration of the Cain Levine Social Competency Scale (CL; see Appendix D). "The Cain Levine was developed explicitly to provide a method of measuring the social competency of trainable mentally retarded children" (Cain, Levine, and Elzey, 1963). The scale provides four subscales: Communication, Social Skills, Initiative, and Self Help. These subscales measure the degree to which the child engages in interpersonal relationships with other children and adults (Social Skills), the degree to which the child's behavior is self-directed (Initiative), and the child's manipulative ability (Self Help). A Total Score for the CL is determined by the cumulative total of the subscale scores.

Growth of the TMR pupils involved in the study was determined by three administrations of the CL. The first administration of the CL was completed in the fall of 1965. Class rosters of the children in each classroom involved in the study were received in September. A schedule for the administration of the CL was developed from the class rosters. The teacher was requested to administer the CL for a specific child on a specific date. The order in which the children were administered the CL was again randomly determined and each teacher had only one

MODEL FOR COLLECTION OF TEACHER VARIABLES

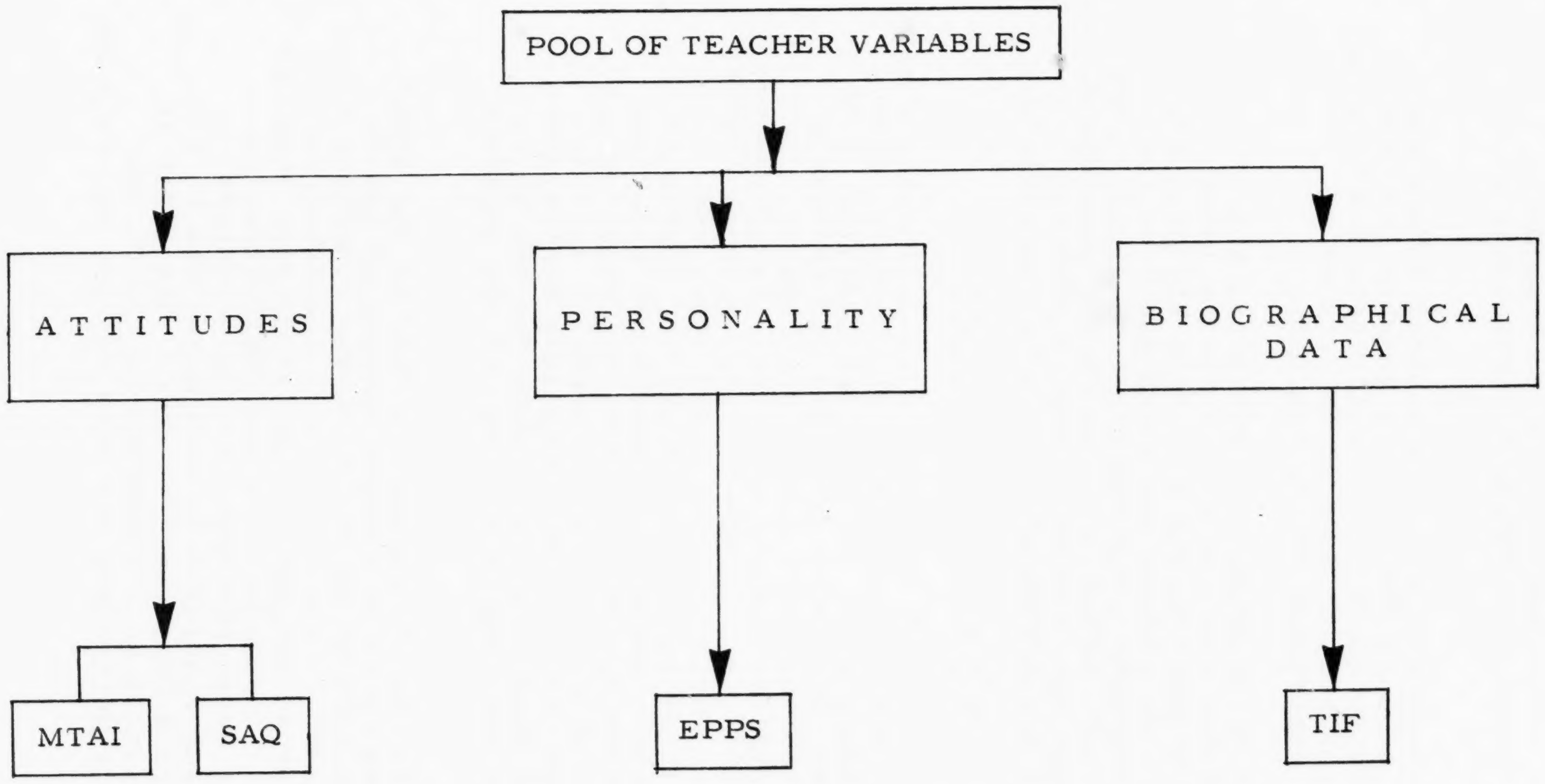

POOL OF TEACHER VARIABLES
ATTITUDES
PERSONALITY
BIOGRAPHICAL DATA
MTAI
SAQ
EPPS
TIF

Figure 1.

CL to administer on any school day. CLs were administered by the teachers in October and November of 1965.

The second administration of the CL was completed in the fall of 1966. Those children who had been administered CLs in 1965 were again administered CLs by their respective teachers. The order in which the children were administered the CL was again randomly determined with each teacher administering only one CL on any school day. The CLs were administered by the teachers in November and December of 1966.

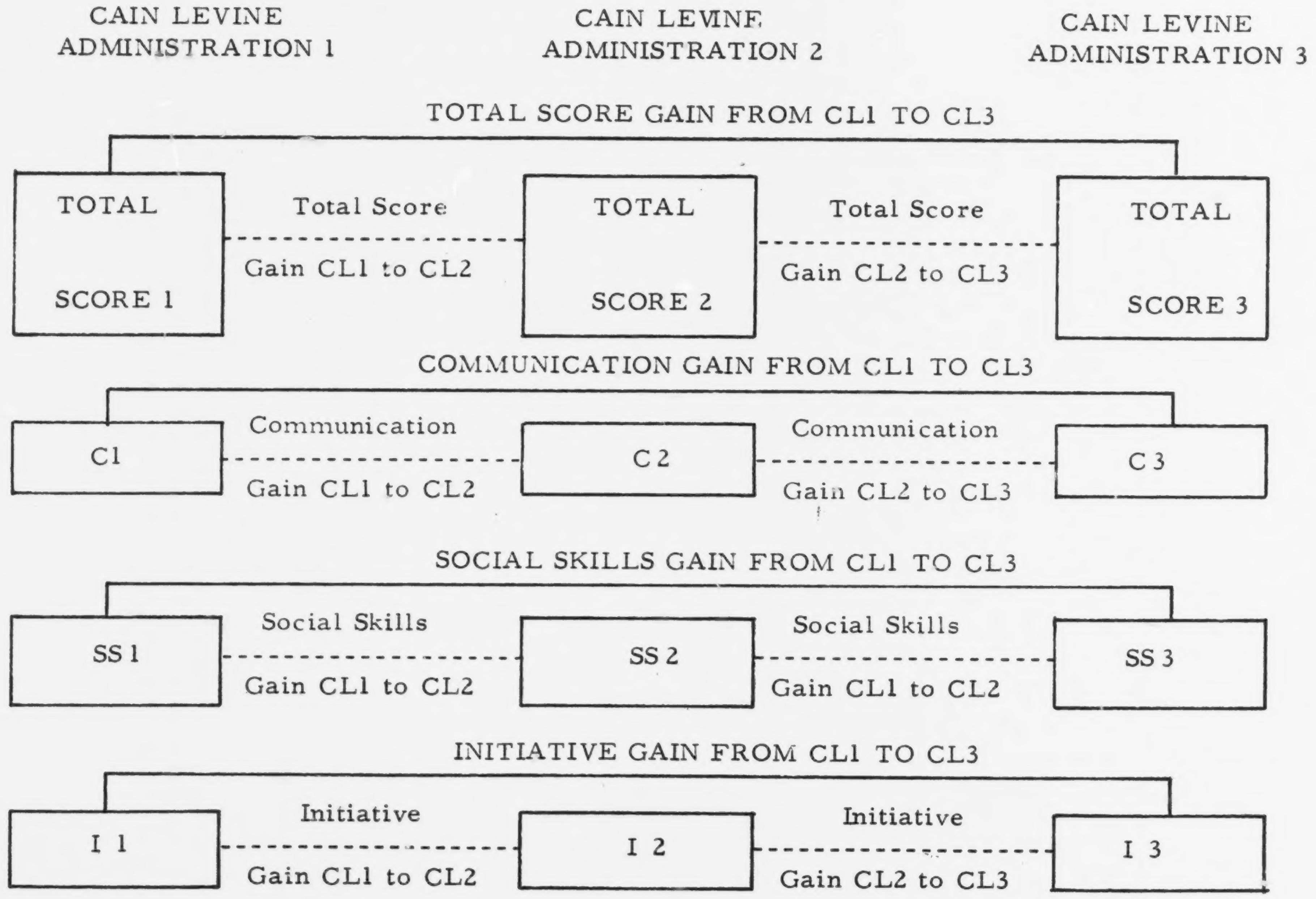
The third administration of the CL was completed in the spring of 1967. The above procedure was again followed with the dates of administration in May and June of 1967.

Three comparisons of CLs were possible: a comparison of CL1 with CL2, a comparison of CL2 with CL3, and a comparison of CL1 with CL3. For each student it was possible to determine the gain or loss of social competency during the period of time between the administration of the CLs through the comparison of the different total CL scores. In the same way, the gains and losses could be determined for the subscales of Communication, Social Skills, Initiative, and Self Help. Figure 2 illustrates the different comparisons on pupil growth which were possible over the three CL administrations.

Class means for gain or loss in Total Score as well as the four subscales were determined over the three CL administrations. Since it was felt that a raw score gain was more beneficial to the students who scored low on CL1, the class means in social competency for Total Score and the subscale scores were calculated on a percentage basis. The percentage score attempted to equalize the low versus high scores on the CL by permitting the high scores to show as much potential gain as the low socrers.

The percentage gain was found by placing the amount gained during the year over the amount of possible gain. Consequently, if a student showed loss during the year, the loss was placed over the

SCHEMATIC DIAGRAM OF CRITERIAN VARIABLES USED IN THE STUDY - -


CAIN LEVINE ADMINISTRATION 1
CAIN LEVINE ADMINISTRATION 2
CAIN LEVINE ADMINISTRATION 3
TOTAL SCORE GAIN FROM CL1 TO CL3
TOTAL SCORE 1
Total Score
Gain CL1 to CL2
TOTAL SCORE 2
Total Score
Gain CL2 to CL3
TOTAL SCORE 3
COMMUNICATION GAIN FROM CL1 TO CL3
C1
Communication
Gain CL1 to CL2
C 2
Communication
Gain CL2 to CL3
C 3
SOCIAL SKILLS GAIN FROM CL1 TO CL3
SS 1
Social Skills
Gain CL1 to CL2
SS 2
Social Skills
Gain CL1 to CL2
SS 3
INITIATIVE GAIN FROM CL1 TO CL3
I 1
Initiative
Gain CL1 to CL2
I 2
Initiative
Gain CL2 to CL3
I 3

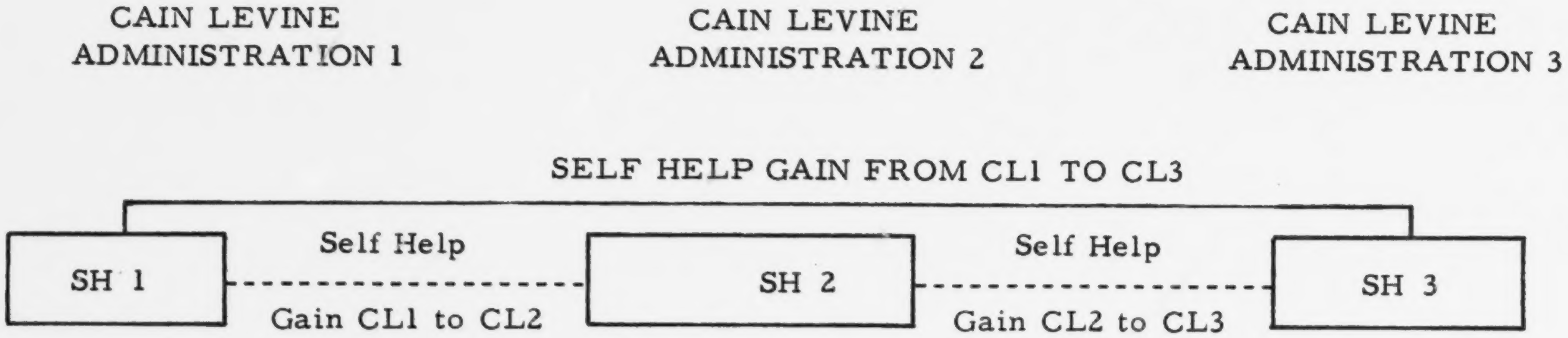

CAIN LEVINE
ADMINISTRATION 1
CAIN LEVINE
ADMINISTRATION 2
CAIN LEVINE
ADMINISTRATION 3
SELF HELP GAIN FROM CL1 TO CL3
SH 1
Self Help
Gain CL1 to CL2
SH 2
Self Help
Gain CL2 to CL3
SH 3

Figure 2.

amount of possible loss in order to determine the percentage of loss for that particular student. The class means were then determined by adding the percentage gains, subtracting the percentage losses, and dividing by the number of students in each class. The class means for total score and the four subscales were all established by this method.

COMPUTER SEARCH PROGRAM

Coding of Teacher Variables

A computer search program was used to identify teacher variables among groups of teachers. The variables were comprised of information on attitudes, personality, and biographical data obtained from the teachers involved in the study and described previously. Since the computer search program required that the teacher variables be coded at either two or three levels, a coding procedure was followed which placed thirty-eight teacher characteristics at either two or three levels. Table 9 describes the teacher factors and the levels under each factor according to the completed coding sheet. Only the scores for teachers included in this investigation were used to determine the code for above or below the median distributions.

Grouping of Teachers for Computer Program

The groups of teachers for the computer program were determined by class mean percentage gain scores on the CL. As previously described, the CL was administered on three occasions to the students in the study. A class mean percentage gain score was computed for the total score and each of the four subscale scores on each of the three comparisons: CL1 to CL2, CL2 to CL3, and CL1 to CL3. The class mean percentage gain scores for each one of the five scores on the Cain Levine over each comparison was then ranked and two groups of teachers were selected: one group of teachers whose class of TMR students showed high percentage gain on the CL, and one group of teachers whose class of TMR students showed little or no percentage gain on the CL.

TABLE 9

CODE FOR TEACHER VARIABLES

Factors	Levels
1. Sex	1 = female 2 = male
2. Marital status	1 = single, widowed, divorced, separated 2 = married
3. Spouse - professional or non-professional	1 = professional 2 = non-professional 3 = no spouse
4. Spouse teaching or non-teaching	1 = teaching 2 = non-teaching 3 = no spouse
5. Number of children in family	1 = 0 2 = 1-2 3 = 3 or over
6. Number of children living at home	1 = 0 2 = 1-2 3 = 3 or over
7. College degree	1 = no degree 2 = BA and/or over 3 = MA and/or over
8. Student teaching	1 = Yes 2 = No
9. Level of Student Teaching	1 = K-3 2 = 4-6 3 = 7-12
10. Choice of occupation	1 = special education teaching 2 = regular teaching 3 = non-teaching

	Factors	Levels
11.	Choice of grade level prefer to teach	1 = preschool and K-3 2 = 4-6 3 = 7 or over
12.	Choice of type of child prefer to teach	1 = Trainable mentally retarded 2 = Other
13.	Years teaching TMR's	1 = one 2 = two to three 3 = four or more
14.	Experience Teaching	1 = Yes 2 = No
15.	Years teaching normals	1 = 0 2 = 1-2 3 = 3 or more
16.	Total years teaching experience	1 = above median 2 = below median
17.	Number of preparation hours outside classroom per week	1 = 0-10 2 = over ten
18.	Other occupational experience	1 = with children and both with and without 2 = without children
19.	Other activities and interests	1 = with children and both with and without 2 = without children
20.	Relationship to MR's other than teaching	1 = none 2 = member of family or other (friend)
21.	Minnesota Teacher Attitude Inventory	1 = above median 2 = below median
	Edwards Personal Preference Schedule	

Factors	Levels
22. Achievement	1 = above median 2 = below median
23. Deference	1 = above median 2 = below median
24. Order	1 = above median 2 = below median
25. Exhibition	1 = above median 2 = below median
26. Autonomy	1 = above median 2 = below median
27. Affiliation	1 = above median 2 = below median
28. Intraception	1 = above median 2 = below median
29. Succorance	1 = above median 2 = below median
30. Dominance	1 = above median 2 = below median
31. Abasement	1 = above median 2 = below median
32. Nurturance	1 = above median 2 = below median
33. Change	1 = above median 2 = below median
34. Endurance	1 = above median 2 = below median

Factors	Levels
35. Heterosexuality	1 = above median 2 = below median
36. Aggression	1 = above median 2 = below median
37. S. A. Q.	1 = above median 2 = below median
38. Age	1 = above median 2 = below median

A high or low mean percentage gain class was defined by the position of the class on the distribution of class mean gains. An equal number of teachers at the extreme ends of the distribution of class means were chosen as high mean percentage gain class teachers or low mean percentage gain class teachers. Teachers whose classes clustered near the median of the class mean distribution were dropped from the computer Search for Group Differences sample in order to maintain greater difference between the high and low mean percentage gain teacher groups.

Figure 3 illustrates the selection of teacher groups for the group differences program from the gain scores on CL1 to CL2. Class mean percentage gain scores were determined for the Total gain as well as the subscale percentage gain scores: Communication, Social Skills, Initiative, and Self Help. The percentage gain scores were ranked and two teacher groups were selected for the Total Score and each of the subscale scores on the basis of whether a teacher's class showed a high mean percentage gain or a low mean percentage gain on the specific CL score in question.

By following the above procedure, groups of teachers were also selected based on pupil mean gain on Total Score and the subscale scores on the other CL comparisons, CL2 to CL3 and CL1 to CL3.

Description of Group Differences Program

The investigators employed a computer program from the computing center at the University of Michigan. The program entitled "Computer Search for Group Differences" was written in MAD by M.C. Johnson (1966) and translated to FORTRAN IV by D.N. Perkuchin. According to the computer center this computer program randomly selects combinations of characteristics, and determines the extent to which each is present within 2 groups of individuals. It is assumed that the possible number of combinations is large. The goal is to identify those which are better discriminators between the groups. The program is designed for use

SELECTION OF TEACHER GROUPS FOR GROUP DIFFERENCES PROGRAM
FROM GAIN SCORES ON CAIN LEVINE 1 TO CAIN LEVINE 2.

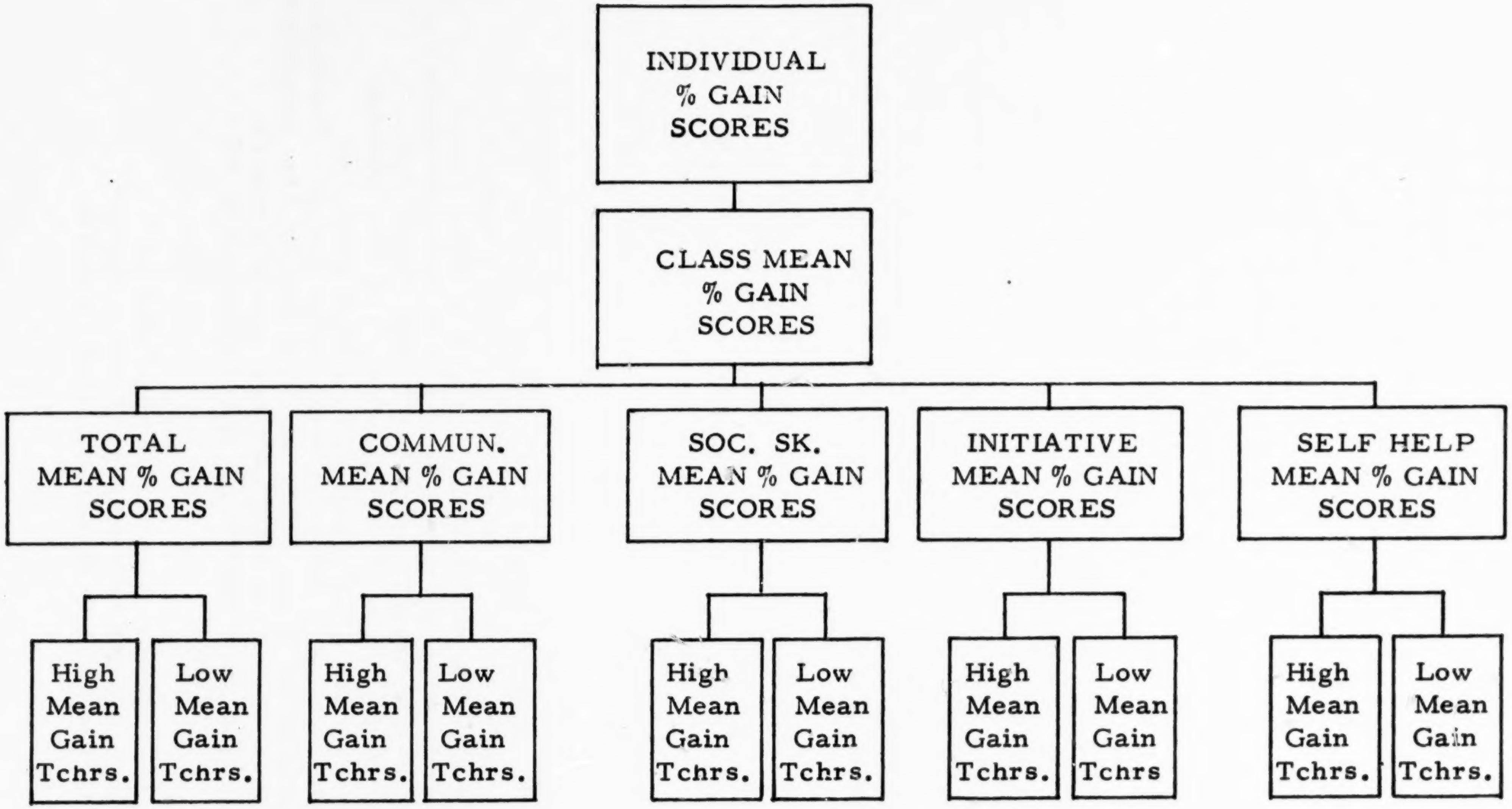

INDIVIDUAL % GAIN SCORES
CLASS MEAN % GAIN SCORES
TOTAL MEAN % GAIN SCORES
COMMUN. MEAN % GAIN SCORES
SOC. SK. MEAN % GAIN SCORES
INITIATIVE MEAN % GAIN SCORES
SELF HELP MEAN % GAIN SCORES
High Mean Gain Tchrs.
Low Mean Gain Tchrs.
High Mean Gain Tchrs.
Low Mean Gain Tchrs.
High Mean Gain Tchrs.
Low Mean Gain Tchrs.
High Mean Gain Tchrs.
Low Mean Gain Tchrs
High Mean Gain Tchrs.
Low Mean Gain Tchrs.

Figure 3.

in classification problems in which the majority of measurements are gradational rather than continuous. Group 1 and group 2 are each divided by the computer into 2 equal subsamples. All comparisons made in processing the data are then duplicated using (a) the first subsample for group 1 and the first subsample for group 2, and (b) the second subsample for group 1 and the second subsample for group 2. The duplication enables the computer to cross check its finding and the investigator is able to obtain evidence on the reliability of sample proportions. Each subsample is searched many times for the presence or absence of combinations of characteristics. The available data pool can include up to 75 factors per individual, each factor being refined at either 2 levels or 3 levels. Three runs through the computer are required to obtain representative samples of all forms of data.

Frequency of occurence and proportional occurence are reported for each of the 2 groups. Output data for the three runs include:

Run 1: Single factor-level characteristics

Run 2: Dyads of characteristics identified by the computer

Run 3: Triads of characteristics identified by the computer

In the group differences program the computer divided the high mean gain group and the low mean gain group of teachers into two equal subsamples. The comparisons made in processing the data could then be duplicated by comparing the first subsample for the high mean gain group with the first subsample for the low mean gain group, and the second subsample for the high mean gain group with the second subsample for the low mean gain group. Through the comparison process with two subsamples the computer cross checked its findings and the investigators received evidence concerning the reliability of sample proportions.

Three computer runs were required to obtain representative samples of the teacher characteristics which discriminated between the two groups for the total score and each of the subscales. The first computer run provided output data on single factor level characteristics. The second computer run provided output data on dyads of characteristics which were identified by the computer and dyads of characteristics which were hypothesized by the investigator. The third computer run provided output data on triads of characteristics which were identified by the computer and triads of characteristics which were hypothesized by the researcher.

While searching for dyads and triads of factor-level characteristics, the computer program assumed no prior knowledge concerning the relative effectiveness of different combinations. The computer selected combinations of characteristics at random. Frequency of occurrence in the first high mean gain subsample was initially compared with frequency of occurrence for the low mean gain subsample. When, for a particular combination, the computer found a difference in proportional occurrence greater than or equal to that observed for any previous combination, a second and independent comparison was made comparing the second subsample of the high mean gain group with the second subsample of the low mean gain group. When the two independent comparisons yielded similar results, the computer printed out the combination of factor-level characteristics along with frequencies and proportional occurrence for each group in each comparison and the difference in proportional occurrence between the two groups in each comparison. Agreement between first and second comparisons was assumed when the value for the proportion obtained in the first comparison did not differ from the value for the proportion in the second comparison by more than one standard error. The standard error of the difference between proportions was defined as $2PQ/N$, with $P = Q = .50$ and $N =$ subsample size.

While the computer continued to search for a combination which discriminated between the two teacher groups, it also printed as output those combinations which were in the vicinity of the current maximum. A combination was assumed to be in the vicinity of the maximum when the difference in proportional occurrence between the two groups was within one standard error of the difference for the maximum. In the group differences program, a number equal to the possible number of dyads was searched for the second computer run. For the third run the computer searched 25,000 triads of characteristics in combination.

The investigators were also able to hypothesize dyads or triads of characteristics as possible discriminators between the two groups. The procedure followed was to examine the output carefully from each previous computer run in order to determine those factors which best discriminated between the two teacher groups. The information which was provided by run #1 enabled the investigators to choose those single characteristics which discriminated between the two teacher groups and hypothesize the best characteristics together as pairs. Following run #2 the pairs of characteristics which best discriminated between the two groups could be hypothesized together as triads. In this way the investigators could be sure that the random search of the computer did not miss the more obvious combinations of characteristics.

Criteria for Factor Selection

Since the random search of the computer resulted in a great number of hypotheses being examined, a criteria was established to determine whether or not the hypotheses of characteristics generated by the computer truly discriminated between the high mean percentage gain group or low mean percentage gain group. The decision to include a factor or combination of factors was based on the percentage of teachers which were found in one group which demonstrated the factor or combination of factors as opposed to the other group. At least twenty-five percent more of the teachers in one group had to demonstrate the factor or combination of factors than the percentage of teachers in the other group. Those factors which showed the greater differences in percentage from the high mean percentage gain teacher group to the low mean percentage gain teacher group were considered to be the most discriminating.

Goal of Computer Search Program

The goal of the computer search was to select from among the pool of teacher variables the single characteristics and those variables in combination of twos or threes which best discriminated between the CL Total Score high mean percentage gain groups and CL Total Score low mean percentage gain groups, the CL Communication high mean percentage gain groups and the CL Communication low mean percentage gain groups, the CL Social Skills high mean percentage gain groups and the CL Social Skills low mean percentage gain groups, the CL Initiative high mean percentage gain groups and the CL Initiative low mean percentage gain groups, and the CL Self Help mean percentage gain groups and the CL Self Help low mean percentage gain groups. The search program was used toward the reduction of the number of characteristics in the data pool to those which appeared to have a significant relationship with pupil growth in TMR classes. The search procedure is conceptualized as a hypothesis generator since the characteristics identified by the computer can be used in a more intensive exploration of other samples. The computer program represents a new approach in the analysis of data resulting from atheoretical exploratory research in that there is no attempt to directly test hypotheses, but rather to generate heuristic hypotheses for further investigation.

RESULTS: TOTAL SCORE COMPARISONS

The sample of teachers selected on the basis of pupil gain on Total Score from CL1 to CL2 was composed of thirty-nine teachers of TMR children. Only those teachers who had administered CLs to the same children in the fall of 1965 and the fall of 1966 were included in the sample. A class mean percentage gain score was computed on pupil gain in Total Score for each of the thirty-nine teachers. The class means were then ranked from the highest mean gain class to the lowest mean gain class. Since the group differences program required an equal number in each group for the comparison process, sixteen teachers were selected from each extreme of the class mean distribution. Therefore, thirty-two teachers were included in the group differences sample: sixteen high mean percentage gain class teachers and sixteen low mean percentage gain class teachers. The seven teachers whose class means clustered around the median were eliminated to maintain greater difference between the high mean gain and low gain teacher groups.

The sample of teachers selected on the basis of pupil gain on Total Score from CL2 to CL3 was composed of fifty-five teachers of TMR children. Only those teachers who had administered CLs to the same children in the fall of 1966 and the spring of 1967 were included in the sample. A class mean percentage gain score was computed on pupil gain in Total Score for each of the fifty-five teachers. The class means were then ranked from the highest to the lowest mean gain class and twenty-two teachers were selected from each extreme of the class mean distribution. Therefore, forty-four teachers were included in the group differences sample: twenty-two high mean percentage gain class teachers and twenty-two low mean percentage gain class teachers. The eleven teachers whose class means clustered around the median were eliminated to maintain greater difference between the two teacher groups.

The sample of teachers selected on the basis of pupil gain on Total Score from CL1 to CL3 was composed of thirty-three teachers of TMR children. Only those teachers who had administered CLs to the same children in the fall of 1965 and the spring of 1967 were included in the sample. A class mean percentage gain score was computed on pupil gain in Total Score for each of the thirty-three teachers. The class means were then ranked from the highest to the lowest mean gain class and fourteen teachers were selected from each extreme of the class mean distribution. Therefore, twenty-eight teachers were included in the group differences sample: fourteen high mean percentage gain class teachers and fourteen low mean percentage gain class teachers. The five teachers whose class means clustered around the median were eliminated to maintain greater difference between the two teacher groups.

The procedure followed in the group differences program for Total Score on the CL is illustrated by Figure 4. The information on teacher attitudes, personality, and biographical data was included in a pool of teacher variables.

The Total Score mean percentage gain on the CL was computed for CL1 to CL2, CL2 to CL3, and CL1 to CL3 in all the classes. Two teacher groups were

SELECTION OF TEACHER FACTORS RELATING TO PUPIL GROWTH ON TOTAL SCORE FOR THE CAIN LEVINE.

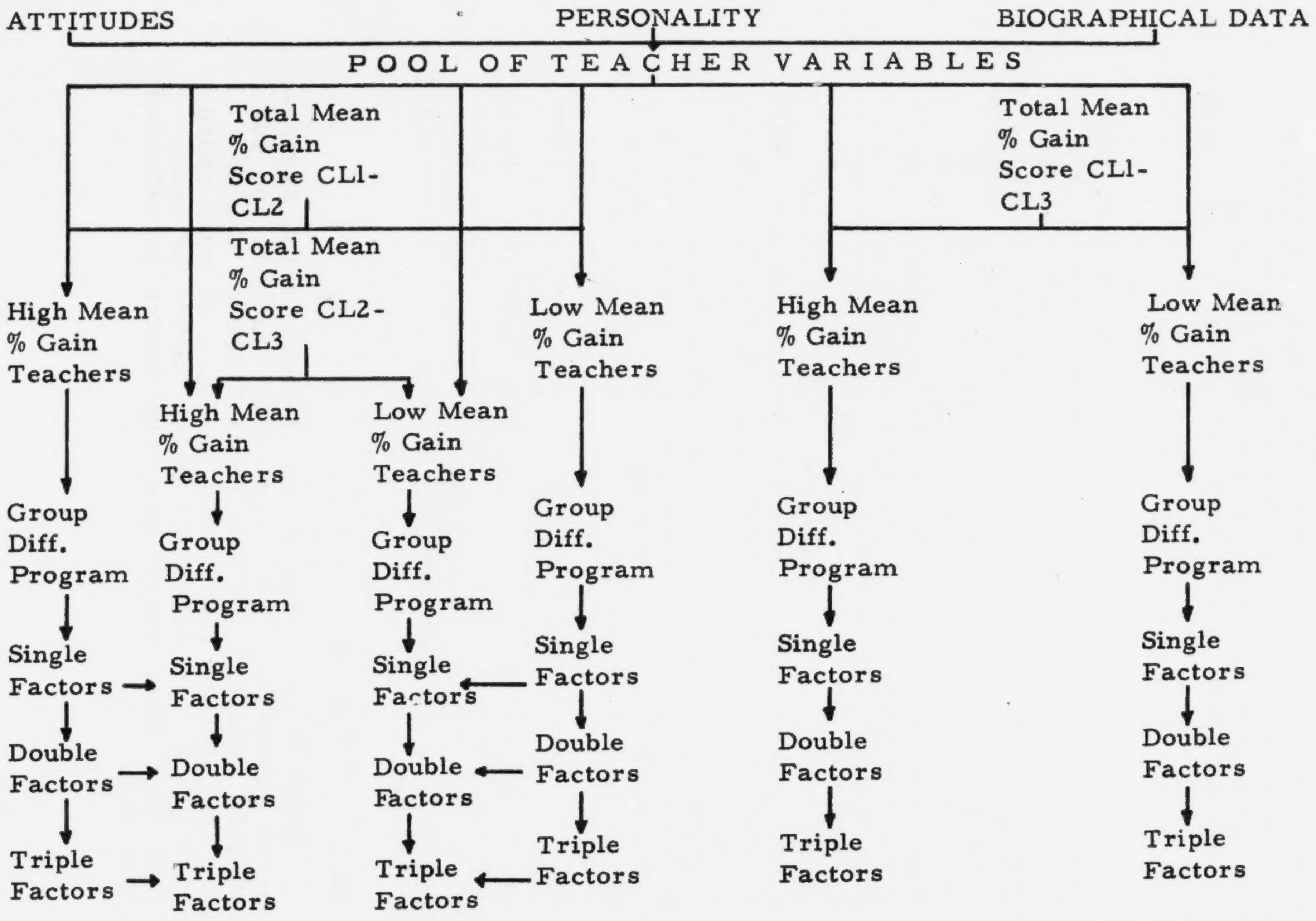

ATTITUDES
PERSONALITY
BIOGRAPHICAL DATA
POOL OF TEACHER VARIABLES
Total Mean % Gain Score CL1-CL2
Total Mean % Gain Score CL2-CL3
Total Mean % Gain Score CL1-CL3
High Mean % Gain Teachers
High Mean % Gain Teachers
Low Mean % Gain Teachers
Low Mean % Gain Teachers
High Mean % Gain Teachers
Low Mean % Gain Teachers
Group Diff. Program
Single Factors
Double Factors
Triple Factors

Figure 4:

established on the basis of either a high Total Score mean percentage gain class or a low Total Score mean percentage gain class over CL1 to CL2, and two teacher groups were established on the basis of either a high Total Score mean percentage gain class or a low Total Score mean percentage gain class over CL2 to CL3, and two teacher groups were established on the basis of either a high Total Score mean percentage gain class or a low Total Score mean percentage gain class over CL1 to CL3.

Once the teacher groups were established, the Computer Search for Group Differences program was run to select single factors, dyadic factors, and triadic factors from the pool of teacher variables which discriminated between the two groups. Whenever single factors, dyadic factors, and triadic factors were found to discriminate between the two teacher groups involved in the CL1 to CL2 administrations, the same factors were examined for the teacher groups involved in the CL2 to CL3 administrations. Only those factors which discriminated between the teacher groups established from both CL1 to CL2 and CL2 to CL3 were selected as showing the closest relationship to Total growth in social competency.

Since the pupil gain scores from CL1 to CL3 covered a period of one and one-half years, the CL1 to CL3 scores were assumed to be the most stable. Therefore, a separate group difference analysis was made of the teacher groups established on the basis of the class mean percentage gain scores from the first to the third CL administrations. The single factors, dyadic factors, and triadic factors which discriminated between the teacher groups over each of the Total scores from CL1 to CL3 were also hypothesized as the significant teacher characteristics to consider.

Single Factor Results

Table 10 lists the single factors which discriminated between the high mean gain teachers and low mean gain teachers for the Total Score on CL1 to CL2. The factors and levels in Table 10 were coded from Table 9. To determine which factor or level a specific number represents, the reader is referred to Table 9.

TABLE 10
TOTAL SCORE
CAIN LEVINE 1-2
SINGLE FACTORS

HIGH MEAN GAIN TEACHER FACTORS

Factor	Level	% Difference for High $\bar{X}$ Teachers
17	2	50.0
35	1	50.0
18	1	43.8
31	2	37.5
15	1	31.2
16	2	31.2
4	1	25.0
5	3	25.0
19	2	25.0
32	1	25.0
36	2	25.0

LOW MEAN GAIN TEACHER FACTORS

Factor	Level	% Difference for Low $\bar{X}$ Teachers
35	2	50.0
17	1	43.7
5	2	37.5
18	2	37.5
31	1	37.5
6	2	31.2
16	1	31.2
4	2	25.0
32	2	25.0
36	1	25.0

The left side of the Table 10 lists the factor number and levels which discriminated between the two teacher groups in favor of the group of teachers whose students showed a high mean gain on Total Score from CL1 to CL2. The first factor is listed as factor 17 and the level represented is level 2. Table 9 reveals that factor 17 deals with the number of preparation hours teachers spent outside the classroom per week. The column headed by % Difference for High Mean Teachers refers to the difference between the percentage of high mean gain teachers and the percentage of low mean gain teachers who showed factor 17 at level 2. The figure in the column was computed by subtracting the percentage of teachers in the low mean gain group who showed the factor and level in question from the percentage of teachers in the high mean gain group who showed the factor and level in question. The factors which showed the greatest difference were the most discriminating factors between the two teacher groups. By consulting Table 9, the reader can note the other factors and levels which discriminated in favor of the high mean gain group of teachers.

The right side of Table 10 lists the factors and levels which discriminated between the two teacher groups in favor of the group of teachers whose students showed a low mean gain on Total Score from CL1 to CL2. The reader is referred to Table 9 to determine which factor or level a number represents. However, the percentage difference between the high mean gain group of teachers and the low mean gain group of teachers always favors the low mean group of teachers.

The Table 10 factors and levels were all suggested as possible discriminators between the teachers whose students showed high mean gain on Total Score from CL2 to CL3 and the teachers whose students showed low mean gain on Total Score from CL2 to CL3.

Table 11 lists the single factors which discriminated between the high mean gain teachers and the low mean gain teachers over both CL1 to CL2 and CL2 to CL3.

TABLE 11
TOTAL SCORE
CAIN LEVINE 1-2, 2-3
SINGLE FACTORS

(A) HIGH MEAN GAIN TEACHER FACTORS

		TEACHERS CL1 TO CL2			TEACHERS CL2 TO CL3		
Factor	Level	% High $\bar{X}$ Teachers	% Low $\bar{X}$ Teachers	Percent Difference	% High $\bar{X}$ Teachers	% Low $\bar{X}$ Teachers	Percent Difference
35	1	75.0	25.0	50.0	68.2	18.2	50.0
31	2	62.5	25.0	37.5	63.6	31.8	31.8

(B) LOW MEAN GAIN TEACHER FACTORS

Factor	Level	% High $\bar{X}$ Teachers (CL1 to CL2)	% Low $\bar{X}$ Teachers (CL1 to CL2)	Percent Difference (CL1 to CL2)	% High $\bar{X}$ Teachers (CL2 to CL3)	% Low $\bar{X}$ Teachers (CL2 to CL3)	Percent Difference (CL2 to CL3)
35	2	25.0	75.0	50.0	31.8	81.8	50.0
31	1	37.5	75.0	37.5	36.4	68.2	31.8

The upper half of Table 11 lists the single factors and levels which favored the high mean gain teacher groups. The lower half of Table 11 lists the single factors and levels which favored the low mean gain teacher groups. On the left side of Table 11 are the percentages of teachers in each group, the high mean gain group and the low mean group, who showed the factor and level in question. The teacher groups were based on pupil Total Score percentage gain from CL1 to CL2. The difference between the two percentages is also listed. On the right side of Table 11 are the percentages of teachers in each group, the high mean gain group and the low mean gain group, who showed the factor and level in question. The teacher groups on the right side were based on pupil Total Score gain from CL2 to CL3. The difference between the two percentages is also noted.

Table 11 lists 2 factors which discriminated between the high mean gain teachers and the low mean gain teachers at the same levels for both the groups determined on gain scores from CL1 to CL2 and the groups determined on gain scores from CL2 to CL3. On factor 35, the EPPS characteristic of heterosexuality, the high mean gain teacher groups scored above the median more frequently, whereas the low mean gain teacher groups scored below the median. On variable 31, the EPPS characteristic of abasement, the low mean gain teacher groups scored above the median more frequently, whereas the high mean gain group scored below the median.

Table 12 lists the single factors which discriminated between the high mean gain teachers and the low mean gain teachers in the groups based on pupil Total Score gain from CL1 to CL3. The upper half of Table 12 lists the factors and levels which were found to discriminate between the two teacher groups in favor of the high mean gain teachers. The following factors and levels were found to discriminate between the groups in favor of the high mean teachers: (1) scores above the median on heterosexuality, (2) scores above the median on the SAQ, (3) scores above the median on affiliation, (4) scores below the median on abasement, (5) a spouse with a nonprofessional occupation, (6) three or more years teaching experience with normal children, (7) teachers' preparation outside class 10 hours per week, (8) scores above the median on achievement, and (9) scores below the median on autonomy.

TABLE 12
TOTAL SCORE
CAIN LEVINE 1-3
SINGLE FACTORS

(A) HIGH MEAN GAIN TEACHER FACTORS

Factor	Level	% High Mean Teachers	% Low Mean Teachers	Percent Difference
*35	1	71.4	21.4	50.0
37	1	71.4	28.6	42.8
27	1	71.4	28.6	42.8
*31	2	64.3	28.6	35.7
3	2	50.0	14.3	35.7
15	3	64.3	35.7	28.6
17	2	57.1	28.6	28.6
22	1	64.3	35.7	28.6
26	2	71.4	42.9	28.6

(B) LOW MEAN GAIN TEACHER FACTORS

Factor	Level	% High Mean Teachers	% Low Mean Teachers	Percent Difference
*35	2	28.6	78.6	50.0
37	2	28.6	71.4	42.8
27	2	28.6	71.4	42.8
*31	1	35.7	71.4	35.7
17	1	28.6	64.3	35.7
22	2	35.7	64.3	28.6
26	1	28.6	57.1	28.6

*Single factors also found in teachers from CL1 to CL2 and CL2 to CL3.

The lower half of Table 12 lists the factors and levels which were found to discriminate between the two teacher groups in favor of the low mean gain teachers. The following factors and levels were found to discriminate between the groups in favor of the low mean teachers: (1) scores below the median on heterosexuality, (2) scores below the median on SAQ, (3) scores below the median on affiliation, (4) scores above the median on abasement, (5) less than 10 hours teachers' preparation outside class per week, (6) scores below the median on achievement, and (7) scores above the median on autonomy.

Dyadic Factor Results

Table 13 presents the dyadic factors and levels which discriminated between the high mean gain teachers and the low mean gain teachers in the groups based on pupils' Total Score gain from CL1 to CL2. The left side of Table 13 lists the factors and levels which favored the high mean gain teacher group, whereas the right side of Table 13 lists the factors and levels which favored the low mean gain teacher group.

The reader must again consult Table 9 to determine which factor or level a number represents. The first two factors listed in combination are 17 and 35. The levels for these numbers are 2 and 1. The 2 refers to level 2 under factor 17 and the 1 refers to level 1 under factor 35. When Table 9 is consulted, the reader finds that factor 17, level 2 refers to over 10 hours in teachers' preparation outside the classroom per week and factor 35, level 1 refers to scores above the median on the EPPS characteristic of heterosexuality. The column headed by % Difference for High Mean Teachers refers to the difference between the percentage of high mean teachers and the percentage of low mean teachers who showed the two factors at the two levels in question. Therefore, when the two groups of teachers, high mean group and low mean group, were examined with regard to factor 17, level 1, and factor 35, level 1; it was found that after subtracting the percentage of low mean gain teachers from the percentage of high mean gain teachers a difference of 56.3 percent remained in favor of the high mean gain teachers.

TABLE 13
TOTAL SCORE
CAIN LEVINE 1-2
DYADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS			LOW MEAN GAIN TEACHER FACTORS		
Dyadic Factors	Levels	% Diff. for High $\bar{X}$ Tchrs.	Dyadic Factors	Levels	% Diff. for Low $\bar{X}$ Tchrs.
17,35	2,1	56.3	35,36	2,1	56.3
17,29	2,2	50.0	4,31	2,1	43.8
17,31	2,2	50.0	4,35	2,2	43.8
18,35	1,1	50.0	16,17	1,1	43.8
11,35	1,1	43.8	16,35	1,2	43.8
15,17	1,2	43.8	27,31	2,1	43.8
16,36	2,2	43.8	4,5	2,2	37.5
17,18	2,1	43.8	4,18	2,2	37.5
17,19	2,2	43.8	5,18	2,2	37.5
18,19	1,2	43.8	5,29	2,1	37.5
19,32	2,1	43.8	5,33	2,1	37.5
30,35	1,1	43.8	5,35	2,2	37.5
31,35	2,1	43.8	6,35	2,2	37.5
11,17	1,2	37.5	16,18	1,2	37.5
15,35	1,1	37.5	16,30	1,2	37.5
16,17	1,2	37.5	17,18	1,2	37.5
16,32	2,1	37.5	17,32	1,2	37.5
16,35	2,1	37.5	17,35	1,2	37.5
17,32	2,1	37.5	17,36	1,1	37.5
18,30	1,1	37.5	18,32	2,2	37.5
18,36	1,2	37.5	18,36	2,1	37.5
18,37	1,1	37.5	32,35	2,2	37.5
19,35	2,1	37.5	4,6	2,2	31.3
29,35	2,1	37.5	4,17	2,1	31.3
30,31	1,2	37.5	4,29	2,1	31.3
30,32	1,1	37.5	4,30	2,2	31.3
32,35	1,1	37.5	5,6	2,2	31.3

TABLE 13
CON'T.
TOTAL SCORE
CAIN LEVINE 1-2
DYADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS			LOW MEAN GAIN TEACHER FACTORS		
Dyadic Factors	Levels	% Diff. for High $\bar{X}$ Tchrs.	Dyadic Factors	Levels	% Diff. for Low $\bar{X}$ Tchrs.
32, 36	1, 2	37.5	5, 16	2, 1	31.3
4, 16	1, 2	31.3	5, 30	2, 2	31.3
5, 11	3, 1	31.3	5, 31	2, 2	31.3
5, 32	3, 1	31.3	5, 36	2, 1	31.3
11, 16	1, 2	31.3	6, 29	2, 1	31.3
11, 18	1, 1	31.3	6, 31	2, 1	31.3
11, 19	1, 2	31.3	6, 36	2, 1	31.3
11, 31	1, 2	31.3	10, 35	2, 2	31.3
11, 36	1, 2	31.3	15, 16	3, 1	31.3
15, 31	1, 2	31.3	15, 35	3, 2	31.3
16, 17	2, 2	31.3	19, 35	1, 2	31.3
16, 19	2, 2	31.3	29, 32	1, 2	31.3
16, 31	2, 2	31.3	29, 35	1, 2	31.3
17, 36	2, 2	31.3	4, 16	2, 1	25.0
18, 31	1, 2	31.3	4, 32	2, 2	25.0
19, 31	2, 2	31.3	5, 11	2, 2	25.0
19, 36	2, 2	31.3	5, 15	2, 3	25.0
3, 16	1, 2	25.0	5, 17	2, 1	25.0
4, 11	1, 1	25.0	5, 32	2, 2	25.0
4, 19	1, 2	25.0	6, 17	2, 1	25.0
4, 36	1, 2	25.0	6, 18	2, 2	25.0
4, 36	1, 2	25.0	6, 18	2, 2	25.0
5, 18	3, 1	25.0	6, 24	2, 1	25.0
5, 19	3, 2	25.0	6, 30	2, 2	25.0
10, 11	3, 1	25.0	10, 31	2, 1	25.0
10, 18	3, 1	25.0	11, 29	2, 1	25.0
11, 15	1, 1	25.0	15, 18	3, 2	25.0

TABLE 13
CON'T.
TOTAL SCORE
CAIN LEVINE 1-2
DYADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS

Dyadic Factors	Levels	% Diff. for High $\bar{X}$ Tchrs.
11,30	1,1	25.0
11,32	1,1	25.0
15,16	1,2	25.0
15,18	1,1	25.0
15,23	1,2	25.0
15,29	1,2	25.0
15,32	1,1	25.0
16,18	2,1	25.0
16,29	2,2	25.0
18,29	1,2	25.0
18,32	1,1	25.0
29,30	2,1	25.0
29,31	2,2	25.0

LOW MEAN GAIN TEACHER FACTORS

Dyadic Factors	Levels	% Diff. for Low $\bar{X}$ Tchrs.
15,19	3,1	25.0
16,29	1,1	25.0
18,21	2,1	25.0
18,29	2,1	25.0
18,30	2,2	25.0
19,29	1,1	25.0
29,36	1,1	25.0
30,35	2,2	25.0

The remaining factors and levels on Table 13 can be examined in the above fashion. The factors and levels under the right side of Table 13 refer to those which favored the low mean gain group over the high mean gain group. Likewise, the column headed % Difference for Low Mean Teachers refers to the percentage which remained after the subtraction of the percentage of high mean gain teachers who showed the factors and levels in question from the percentage of low mean gain teachers.

The Table 13 factors and levels were all suggested as possible discriminators between the teachers whose students showed high mean gain on Total Score from CL2 to CL3 and the teachers whose students showed low mean gain on Total Score from CL2 to CL3. Table 14 lists dyads which discriminated between the high mean gain teachers and the low mean gain teachers over both CL1 to CL2 and CL2 to CL3.

The upper half of Table 14 lists the dyads which favored the high mean gain teacher groups. The lower half of Table 14 lists the dyads which favored the low mean gain teacher groups. On the left side of Table 14 are the percentages of teachers in each group, the high mean gain group and the low mean gain group, who showed the combination of factors and levels in question. The teacher groups were based on pupil Total Score gain from CL1 to CL2. The difference between the two percentages is also listed. On the right side of Table 14 are the percentage of teachers in the high mean gain group and the percentage of teachers in the low mean gain group who showed the combination of factors and levels in question. The teacher groups were based on pupils' Total Score gain from CL2 to CL3. The difference between the two percentages is also noted.

Table 14 lists seven combinations of dyadic factors and levels which discriminated between the high mean gain teachers and the low mean gain teachers in favor of the high mean gain teachers. The following combinations of dyadic factors were found to favor the high mean gain teachers:

TABLE 14
TOTAL SCORE
CAIN LEVINE 1-2, 2-3
DYADIC FACTORS

(A) HIGH MEAN GAIN TEACHER FACTORS

TEACHERS CL1 TO CL2					TEACHERS CL2 TO CL3		
Factors	Levels	% High $\overline{X}$ Teachers	% Low $\overline{X}$ Teachers	Percent Difference	% High $\overline{X}$ Teachers	% Low $\overline{X}$ Teachers	Percent Difference
19,35	2,1	62.5	25.0	37.5	59.1	13.6	45.5
31,35	2,1	56.3	12.5	43.8	45.5	13.6	31.9
11,35	1,1	56.3	12.5	43.8	40.9	9.1	31.8
17,19	2,2	50.0	6.3	43.7	40.9	9.1	31.8
16,35	2,1	37.5	0	37.5	40.9	4.5	36.4
19,31	2,2	37.5	12.5	25.0	40.9	13.6	27.3
29,31	2,2	37.5	12.5	25.0	40.9	13.6	27.3

TABLE 14
CON'T.
TOTAL SCORE
CAIN LEVINE 1-2, 2-3
DYADIC FACTORS

(B) LOW MEAN GAIN TEACHER FACTORS

TEACHERS CL1 TO CL2					TEACHERS CL2 TO CL3		
Factors	Levels	% High $\overline{X}$ Teachers	% Low $\overline{X}$ Teachers	Percent Difference	% High $\overline{X}$ Teachers	% Low $\overline{X}$ Teachers	Percent Difference
35,36	2,1	0	56.3	56.3	9.1	40.9	31.8
17,35	1,2	18.8	56.3	37.5	9.1	50.0	40.9
27,31	2,1	6.3	50.0	43.8	18.2	45.5	27.3
19,35	1,2	6.3	37.5	31.2	18.2	50.0	31.8
30,35	2,2	18.8	43.8	25.0	18.2	54.5	36.3
29,35	1,2	25.0	56.3	31.3	18.2	45.5	27.3

(1) other activities and interests independent of interaction with children and scores above the median on the EPPS characteristics of heterosexuality;

(2) scores below the median on the EPPS characteristic of abasement and scores above the median on heterosexuality;

(3) choice of grade level to teach at preschool through third grade and scores above the median on heterosexuality;

(4) over 10 hours per week in teachers' preparation outside the classroom and scores above the median on heterosexuality;

(5) number of years teaching experience below the median and scores above the median on heterosexuality;

(6) other activities and interests without children and scores below the median on abasement;

(7) scores below the median on the EPPS characteristics of succorance and scores below the median on abasement.

Table 14 lists six combinations of dyadic factors at the same levels which discriminated between the high mean gain teachers and the low mean gain teachers in favor of the low mean gain teachers. The following combinations of dyadic factors favored the low mean gain teachers:

(1) scores below the median on heterosexuality and scores above the median on the EPPS characteristic of aggression;

(2) teachers' preparation hours outside class less than 10 hours per week and scores below the median on heterosexuality;

(3) scores below the median on the EPPS variable of affiliation and above the median on abasement;

(4) other activities and interests with children and scores below the median on heterosexuality;

(5) scores below the median on the EPPS characteristic of dominance and scores below the median on heterosexuality;

(6) scores above the median on succorance and below the median on heterosexuality.

Table 15 lists the dyads which discriminated between the high mean gain teachers and the low mean gain teachers based on pupil Total Score gain from CL1 to CL3. The left side of Table 15 presents dyads which favored the high mean gain teachers. The factors and levels are listed in order of more discriminating factors to less discriminating factors. The following dyadic factors favored the high mean gain group of teachers:

(1) no experience teaching educable mentally retarded (EMR) children and scores above the median on heterosexuality;

(2) years of teaching experience below the median and scores above the median on heterosexuality;

(3) scores above the median on affiliation and above the median on heterosexuality;

(4) scores above the median on heterosexuality and above the median on the SAQ;

(5) a BA or BS college degree and above the median score on SAQ;

(6) three or more years teaching normal children and a score above the median on heterosexuality;

(7) over 10 hours of teacher preparation per week outside the classroom and scores above the median on the SAQ;

TABLE 15
TOTAL SCORE
CAIN LEVINE 1-3
DYADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS					LOW MEAN GAIN TEACHER FACTORS				
Dyadic Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Lo $\overline{X}$ Tchrs.	% Diff.	Dyadic Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Lo $\overline{X}$ Tchrs.	% Diff.
14,35	2,1	50.0	0	50.0	*17,35	1,2	0	57.1	57.1
*16,35	2,1	50.0	0	50.0	31,35	1,2	14.3	71.4	57.1
27,35	1,1	50.0	0	50.0	17,31	1,1	7.1	57.1	50.0
35,37	1,1	57.1	7.1	50.0	22,27	2,2	0	50.0	50.0
7,37	2,1	50.0	7.1	42.9	22,37	2,2	0	50.0	50.0
15,35	3,1	50.0	7.1	42.9	26,37	1,2	0	50.0	50.0
17,37	2,1	42.9	0	42.9	17,27	1,2	0	42.9	42.9
26,31	2,2	42.9	0	42.9	22,26	2,1	7.1	50.0	42.9
26,35	2,1	42.9	0	42.9	22,35	2,2	7.1	50.0	42.9
27,37	1,1	57.1	14.3	42.8	*27,31	2,1	7.1	50.0	42.9
3,35	2,1	35.7	0	35.7	27,35	2,2	7.1	50.0	42.9
4,27	2,1	42.9	7.1	35.8	27,37	2,2	14.3	57.1	42.8
14,17	2,2	42.9	7.1	35.8	31,37	1,2	7.1	50.0	42.9
15,27	3,1	50.0	14.3	35.7	35,37	2,2	14.3	57.1	42.8
15,31	3,2	42.9	7.1	35.8	2,15	2,2	0	35.7	35.7
15,36	3,2	35.7	0	35.7	26,27	1,2	14.3	50.0	35.7
17,27	2,1	35.7	0	35.7	26,35	1,2	0	35.7	35.7
22,31	1,2	42.9	7.1	35.8	17,37	1,2	7.1	35.7	28.6

TABLE 15
CON'T.
TOTAL SCORE
CAIN LEVINE 1-3
DYADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS

Dyadic Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Lo $\overline{X}$ Tchrs.	% Diff.
22, 35	1, 1	42.9	7.1	35.8
26, 27	2, 1	57.1	21.4	35.7
27, 31	1, 2	42.9	7.1	35.8
31, 37	2, 1	42.9	7.1	35.8
3, 17	2, 2	28.6	0	28.6
3, 22	2, 1	35.7	7.1	28.6
3, 26	2, 2	42.9	14.3	28.6
3, 31	2, 2	28.6	0	28.6
3, 37	2, 1	35.7	7.1	28.6
15, 26	3, 2	50.0	21.4	28.6
15, 37	3, 1	42.9	14.3	28.6
17, 22	2, 1	35.7	7.1	28.6
17, 26	2, 2	35.7	7.1	28.6
17, 31	2, 2	42.9	14.3	28.6
23, 37	1, 1	35.7	7.1	28.6
*31, 35	2, 1	50.0	21.4	28.6
35, 38	1, 2	35.7	7.1	28.6

LOW MEAN GAIN TEACHER FACTORS

Dyadic Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Lo $\overline{X}$ Tchrs.	% Diff.
22, 31	2, 1	14.3	42.9	28.6
23, 26	1, 1	7.1	35.7	28.6
25, 31	1, 1	7.1	35.7	28.6

* Factors and levels also found in Teacher groups from CL1 to CL2 and CL2 to CL3.

(8) scores below the median on autonomy and scores below the median on abasement;

(9) scores below the median on autonomy, and scores above the median on heterosexuality;

(10) scores below the median on affiliation and scores above the median on the SAQ;

(11) a nonprofessional spouse and scores above the median on heterosexuality;

(12) a nonteaching spouse and scores above the median on affiliation;

(13) no experience teaching EMR children and over 10 hours of teacher preparation per week outside the classroom;

(14) three or more years teaching normal children and scores above the median on affiliation;

(15) three or more years teaching normal children and scores below the median on abasement;

(16) over 10 hours of teacher preparation per week outside the classroom and scores below the median on aggression;

(17) over 10 hours of teacher preparation per week outside the classroom and scores above the median on affiliation;

(18) scores above the median on achievement and scores below the median on abasement;

(19) scores above the median on achievement and above the median on heterosexuality;

(20) scores below the median on autonomy and above the median on affiliation;

(21) scores above the median on affiliation and below the median on abasement;

(22) scores below the median on abasement and above the median on the SAQ;

(23) a nonprofessional spouse and over 10 hours of teacher preparation per week outside the classroom;

(24) a nonprofessional spouse and scores above the median on achievement;

(25) a nonprofessional spouse and scores below the median on autonomy;

(26) a nonprofessional spouse and scores below the median on abasement;

(27) a nonprofessional spouse and scores above the median on the SAQ;

(28) three or more years teaching normal children and scores below the median on autonomy;

(29) three or more years teaching normal children and scores above the median on the SAQ;

(30) over 10 hours of teacher preparation per week outside the classroom and scores above the median on achievement;

(31) over 10 hours of teacher preparation per week outside the classroom and scores below the median on autonomy;

(32) over 10 hours of teacher preparation per week outside the classroom and scores below the median on abasement;

(33) scores above the median on deference and scores above the median on the SAQ;

(34) scores below the median on abasement and above the median on heterosexuality;

(35) scores above the median on heterosexuality and below the median on age.

The right side of Table 15 lists the combinations of dyadic factors which favored the low mean gain teachers. The following dyads favored the low mean gain group of teachers:

(1) less than 10 hours per week of teacher preparation outside the classroom and scores below the median on heterosexuality;

(2) scores above the median on abasement and below the median on heterosexuality;

(3) less than 10 hours per week of teacher preparation outside the classroom and scores above the median on abasement;

(4) scores below the median on achievement and below the median on affiliation;

(5) scores below the median on achievement and below the median on the SAQ;

(6) scores above the median on autonomy and below the median on the SAQ;

(7) less than 10 hours per week of teacher preparation outside the classroom and scores below the median on affiliation;

(8) scores below the median on achievement and above the median on autonomy;

(9) scores below the median on achievement and below the median on heterosexuality;

(10) scores below the median on affiliation and above the median on abasement;

(11) scores below the median on affiliation and below the median on heterosexuality;

(12) scores below the median on affiliation and below the median on the SAQ;

(13) scores above the median on abasement and below the median on heterosexuality;

(14) scores below the median on heterosexuality and below the median on the SAQ;

(15) married and one or two years teaching normal children;

(16) scores above the median on autonomy and below the median on affiliation;

(17) scores above the median on autonomy and below the median on heterosexuality;

(18) less than 10 hours per week of teacher preparation outside the classroom and scores below the median on the SAQ;

(19) scores below the median on achievement and above the median on abasement;

(20) scores above the median on deference and above the median on autonomy;

(21) scores above the median on exhibition and above the median on abasement.

Triadic Factor Results

Table 16 lists the triadic factors and levels which discriminated between the high mean gain teachers and the low mean gain teachers in the groups based on Total Score gain from CL1 to CL2. The left side of Table 16 lists the factors and levels which favored the high mean gain teacher group, whereas the right side of Table 16 lists the factors and levels which favored the low mean gain teacher group.

TABLE 16
TOTAL SCORE
CAIN LEVINE 1-2
TRIADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS			LOW MEAN GAIN TEACHER FACTORS		
Triadic Factors	Levels	% Difference for High $\overline{X}$ Teachers	Triadic Factors	Levels	% Difference for Low $\overline{X}$ Teachers
17, 29, 35	2, 2, 1	50.0	31, 35, 36	1, 2, 1	50.0
17, 31, 35	2, 2, 1	50.0	6, 33, 35	2, 1, 2	43.8
7, 16, 21	2, 2, 2	43.8	17, 35, 36	1, 2, 1	43.8
11, 16, 36	1, 2, 2	43.8	4, 5, 18	2, 2, 2	37.5
11, 17, 35	1, 2, 1	43.8	4, 5, 31	2, 2, 1	37.5
17, 18, 35	2, 1, 1	43.8	4, 5, 33	2, 2, 1	37.5
17, 19, 35	2, 2, 1	43.8	4, 6, 31	2, 2, 1	37.5
18, 30, 35	1, 1, 1	43.8	4, 6, 33	2, 2, 1	37.5
22, 29, 35	2, 2, 1	43.8	4, 6, 35	2, 2, 2	37.5
2, 19, 32	2, 2, 1	37.5	4, 17, 31	2, 1, 1	37.5
6, 15, 35	1, 1, 1	37.5	4, 18, 31	2, 2, 1	37.5
6, 17, 29	1, 2, 2	37.5	4, 29, 31	2, 1, 1	37.5
6, 17, 35	1, 2, 1	37.5	4, 29, 35	2, 1, 2	37.5
11, 15, 36	1, 1, 2	37.5	5, 6, 33	2, 2, 1	37.5

TABLE 16
CON'T.
TOTAL SCORE
GAIN LEVINE 1-2
TRIADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS			LOW MEAN GAIN TEACHER FACTORS		
Triadic Factors	Levels	% Difference for High $\overline{X}$ Teachers	Triadic Factors	Levels	% Difference for Low $\overline{X}$ Teachers
11, 16, 32	1, 2, 1	37.5	5, 6, 35	2, 2, 2	37.5
11, 17, 31	1, 2, 1	37.5	5, 30, 33	2, 2, 1	37.5
11, 18, 35	1, 1, 1	37.5	5, 30, 35	2, 2, 2	37.5
11, 19, 32	1, 2, 1	37.5	5, 33, 35	2, 1, 2	37.5
11, 30, 35	1, 1, 1	37.5	5, 35, 36	2, 2, 1	37.5
11, 31, 35	1, 2, 1	37.5	6, 29, 33	2, 1, 1	37.5
11, 35, 37	1, 1, 1	37.5	6, 35, 36	2, 2, 1	37.5
15, 16, 17	1, 2, 2	37.5	16, 17, 20	1, 1, 1	37.5
15, 16, 36	1, 2, 2	37.5	17, 26, 27	1, 1, 2	37.5
15, 17, 35	1, 2, 1	37.5	17, 27, 31	1, 2, 1	37.5
15, 17, 36	1, 2, 2	37.5	18, 35, 36	2, 2, 1	37.5
16, 19, 36	2, 2, 2	37.5	27, 31, 32	2, 1, 2	37.5
16, 32, 36	2, 1, 2	37.5	37, 31, 35	2, 1, 2	37.5
17, 18, 29	2, 1, 2	37.5	29, 35, 36	1, 2, 1	37.5
17, 18, 30	2, 1, 1	37.5	2, 29, 32	2, 1, 2	31.3

TABLE 16
CON'T.
TOTAL SCORE
CAIN LEVINE 1-2
TRIADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS

Triadic Factors	Levels	% Difference for High $\bar{X}$ Teachers
17, 19, 31	2, 2, 2	37.5
17, 26, 29	2, 1, 2	37.5
17, 29, 30	2, 2, 1	37.5
17, 29, 31	2, 2, 2	37.5
17, 30, 31	2, 1, 2	37.5
17, 30, 35	2, 1, 1	37.5
18, 19, 32	1, 2, 1	37.5
18, 19, 35	1, 2, 1	37.5
18, 29, 35	1, 2, 1	37.5
18, 31, 35	1, 2, 1	37.5
19, 30, 32	2, 1, 1	37.5
19, 30, 35	2, 1, 1	37.5
19, 32, 35	2, 1, 1	37.5
19, 32, 36	2, 1, 2	37.5
22, 27, 35	2, 1, 1	37.5

LOW MEAN GAIN TEACHER FACTORS

Triadic Factors	Levels	% Difference for Low $\bar{X}$ Teachers
4, 5, 6	2, 2, 2	31.3
4, 5, 29	2, 2, 1	31.3
4, 5, 30	2, 2, 2	31.3
4, 6, 29	2, 2, 1	31.3
4, 16, 31	2, 1, 1	31.3
4, 16, 35	2, 1, 2	31.3
4, 17, 35	2, 1, 2	31.3
4, 18, 29	2, 2, 1	31.3
4, 18, 30	2, 2, 2	31.3
4, 18, 32	2, 2, 2	31.3
4, 18, 32	2, 2, 1	31.3
4, 18, 35	2, 2, 2	31.3
4, 29, 32	2, 1, 2	31.3
4, 30, 31	2, 2, 1	31.3
4, 30, 35	2, 2, 2	31.3

TABLE 16
CON'T.
TOTAL SCORE
CAIN LEVINE 1-2
TRIADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS

Triadic Factors	Levels	% Difference for High $\overline{X}$ Teachers
29, 30, 35	2, 1, 1	37.5
30, 32, 35	1, 1, 1	37.5
2, 16, 22	2, 2, 1	31.3
5, 11, 32	3, 1, 1	31.3
6, 15, 16	1, 1, 2	31.3
6, 16, 17	1, 2, 2	31.3
6, 16, 35	1, 2, 1	31.3
6, 16, 36	1, 2, 2	31.3
6, 17, 19	1, 2, 2	31.3
6, 17, 31	1, 2, 2	31.3
6, 18, 19	1, 1, 2	31.3
6, 18, 35	1, 1, 1	31.3
6, 19, 32	1, 2, 1	31.3
11, 12, 36	1, 1, 2	31.3
11, 15, 17	1, 1, 2	31.3
11, 17, 18	1, 2, 1	31.3

LOW MEAN GAIN TEACHER FACTORS

Triadic Factors	Levels	% Difference for Low $\overline{X}$ Teachers
4, 31, 32	2, 1, 2	31.3
4, 32, 33	2, 2, 1	31.3
4, 32, 35	2, 2, 2	31.3
4, 33, 35	2, 1, 2	31.3
5, 6, 18	2, 2, 2	31.3
5, 6, 29	2, 2, 1	31.3
5, 6, 36	2, 2, 1	31.3
5, 16, 29	2, 1, 1	31.3
5, 16, 30	2, 1, 2	31.3
5, 16, 35	2, 1, 2	31.3
5, 17, 33	2, 1, 1	31.3
5, 18, 29	2, 2, 1	31.3
5, 18, 30	2, 2, 2	31.3
5, 18, 31	2, 2, 1	31.3
5, 18, 33	2, 2, 1	31.3
5, 18, 35	2, 2, 2	31.3

TABLE 16
CON'T.
TOTAL SCORE
CAIN LEVINE 1-2
TRIADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS

Triadic Factors	Levels	% Difference for High $\bar{X}$ Teachers
11,17,19	1,2,2	31.3
11,17,29	1,2,2	31.3
11,17,30	1,2,1	31.3
11,17,36	1,2,2	31.3
11,18,19	1,1,2	31.3
11,18,36	1,1,2	31.3
11,18,37	1,1,1	31.3
11,19,35	1,2,1	31.3
11,19,36	1,2,2	31.3
11,30,31	1,1,2	31.3
11,31,37	1,2,1	31.3
11,32,36	1,1,2	31.3
12,35,37	1,1,1	31.3
15,16,31	1,2,2	31.3
15,16,35	1,2,1	31.3

LOW MEAN GAIN TEACHER FACTORS

Triadic Factors	Levels	% Difference for Low $\bar{X}$ Teachers
5,29,33	2,1,1	31.3
5,29,35	2,1,2	31.3
5,29,36	2,1,1	31.3
5,30,36	2,2,1	31.3
5,31,36	2,1,1	31.3
5,33,36	2,1,1	31.3
6,16,35	2,1,2	31.3
6,17,33	2,1,1	31.3
6,29,35	2,1,2	31.3
6,29,36	2,1,1	31.3
6,30,33	2,2,1	31.3
6,30,35	2,2,2	31.3
6,31,33	2,1,1	31.3
6,31,35	2,1,2	31.3
6,31,36	2,1,1	31.3

TABLE 16
CON'T.
TOTAL SCORE
CAIN LEVINE 1-2
TRIADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS

Triadic Factors	Levels	% Difference for High $\bar{X}$ Teachers
15, 17, 29	1, 2, 2	31.3
15, 17, 31	1, 2, 2	31.3
15, 29, 35	1, 2, 1	31.3
15, 32, 36	1, 1, 2	31.3
16, 17, 31	2, 2, 2	31.3
16, 17, 35	2, 2, 1	31.3
16, 17, 36	2, 2, 2	31.3
16, 19, 32	2, 2, 1	31.3
16, 19, 35	2, 2, 1	31.3
16, 19, 37	2, 2, 1	31.3
16, 29, 35	2, 2, 1	31.3
16, 36, 37	2, 2, 1	31.3
17, 18, 19	2, 1, 2	31.3
17, 18, 31	2, 1, 2	31.3
17, 19, 32	2, 2, 1	31.3

LOW MEAN GAIN TEACHER FACTORS

Triadic Factors	Levels	% Difference for Low $\bar{X}$ Teachers
6, 33, 36	2, 1, 1	31.3
16, 17, 31	1, 1, 1	31.3
16, 17, 33	1, 1, 1	31.3
16, 17, 35	1, 1, 2	31.3
16, 29, 35	1, 1, 2	31.3
16, 30, 33	1, 2, 1	31.3
16, 30, 35	1, 2, 2	31.3
16, 31, 35	1, 1, 2	31.3
17, 18, 32	1, 2, 2	31.3
17, 27, 32	1, 2, 2	31.3
17, 27, 35	1, 2, 2	31.3
17, 27, 36	1, 2, 1	31.3
17, 31, 32	1, 1, 2	31.3
17, 31, 35	1, 1, 2	31.3
17, 31, 36	1, 1, 1	31.3

TABLE 16
CON'T.
TOTAL SCORE
CAIN LEVINE 1-2
TRIADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS

Triadic Factors	Levels	% Difference for High $\bar{X}$ Teachers
17, 30, 32	2, 1, 1	31.3
17, 32, 35	2, 1, 1	31.3
17, 32, 36	2, 1, 2	31.3
18, 19, 36	1, 2, 2	31.3
18, 30, 31	1, 1, 2	31.3
18, 32, 35	1, 1, 1	31.3
18, 35, 37	1, 1, 1	31.3
19, 23, 31	2, 2, 2	31.3
19, 31, 35	2, 2, 1	31.3
27, 31, 35	2, 2, 1	31.3
30, 31, 35	1, 2, 1	31.3
2, 26, 37	2, 1, 1	25.0
4, 11, 36	1, 1, 2	25.0
4, 16, 36	1, 2, 2	25.0
5, 11, 18	3, 1, 1	25.0
5, 11, 37	3, 1, 1	25.0

LOW MEAN GAIN TEACHER FACTORS

Triadic Factors	Levels	% Difference for Low $\bar{X}$ Teachers
18, 27, 32	2, 2, 2	31.3
18, 29, 31	2, 1, 1	31.3
18, 29, 35	2, 1, 2	31.3
18, 29, 36	2, 1, 1	31.3
18, 31, 32	2, 1, 2	31.3
18, 31, 36	2, 1, 1	31.3
18, 32, 35	2, 2, 2	31.3
20, 27, 31	1, 2, 1	31.3
27, 31, 36	2, 1, 1	31.3
27, 35, 36	2, 2, 1	31.3
29, 31, 32	1, 1, 2	31.3
29, 31, 36	1, 1, 1	31.3
29, 32, 35	1, 2, 2	31.3
29, 33, 35	1, 1, 2	31.3
30, 35, 36	2, 2, 1	31.3
31, 32, 35	1, 2, 2	31.3

TABLE 16
CON'T.
TOTAL SCORE
CAIN LEVINE 1-2
TRIADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS

Triadic Factors	Levels	% Difference for High $\bar{X}$ Teachers
5, 18, 19	3, 1, 2	25.0
5, 19, 37	3, 2, 1	25.0
6, 11, 15	1, 1, 1	25.0
6, 15, 18	1, 1, 1	25.0
6, 15, 29	1, 1, 2	25.0
6, 15, 31	1, 1, 2	25.0
6, 15, 32	1, 1, 1	25.0
6, 15, 37	1, 1, 1	25.0
6, 16, 19	1, 2, 2	25.0
6, 16, 31	1, 2, 2	25.0
6, 16, 37	1, 2, 1	25.0
6, 17, 18	1, 2, 1	25.0
6, 17, 30	1, 2, 1	25.0
6, 17, 32	1, 2, 1	25.0
6, 17, 36	1, 2, 2	25.0

LOW MEAN GAIN TEACHER FACTORS

Triadic Factors	Levels	% Difference for Low $\bar{X}$ Teachers
33, 35, 36	1, 2, 1	31.3
2, 3, 17	1, 3, 1	25.0
4, 5, 16	2, 2, 1	25.0
4, 5, 17	2, 2, 1	25.0
4, 6, 17	2, 2, 1	25.0
4, 6, 18	2, 2, 2	25.0
4, 6, 30	2, 2, 2	25.0
4, 16, 18	2, 1, 2	25.0
4, 16, 30	2, 1, 2	25.0
4, 16, 33	2, 1, 1	25.0
4, 17, 18	2, 1, 2	25.0
4, 17, 27	2, 1, 2	25.0
4, 17, 32	2, 1, 2	25.0
4, 17, 33	2, 1, 1	25.0
4, 27, 31	2, 2, 1	25.0

TABLE 16
CON'T.
TOTAL SCORE
CAIN LEVINE 1-2
TRIADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS Triadic Factors	Levels	% Difference for High $\overline{X}$ Teachers	LOW MEAN GAIN TEACHER FACTORS Triadic Factors	Levels	% Difference for Low $\overline{X}$ Teachers
6, 18, 30	1, 1, 1	25.0	4, 29, 33	2, 1, 1	25.0
6, 18, 32	1, 1, 1	25.0	4, 29, 36	2, 1, 1	25.0
6, 18, 36	1, 1, 2	25.0	4, 30, 33	2, 2, 1	25.0
6, 18, 37	1, 1, 1	25.0	4, 31, 33	2, 1, 1	25.0
6, 30, 35	1, 1, 1	25.0	5, 6, 16	2, 2, 1	25.0
6, 31, 35	1, 2, 1	25.0	5, 6, 30	2, 2, 2	25.0
6, 32, 35	1, 1, 1	25.0	5, 6, 31	2, 2, 1	25.0
7, 11, 27	2, 1, 1	25.0	5, 14, 16	2, 1, 1	25.0
11, 15, 23	1, 1, 2	25.0	5, 16, 17	2, 1, 1	25.0
11, 15, 31	1, 1, 2	25.0	5, 16, 18	2, 1, 2	25.0
11, 15, 32	1, 1, 1	25.0	5, 16, 31	2, 1, 1	25.0
11, 15, 35	1, 1, 1	25.0	5, 16, 33	2, 1, 1	25.0
11, 16, 19	1, 2, 2	25.0	5, 17, 32	2, 1, 2	25.0
11, 16, 31	1, 2, 2	25.0	5, 17, 36	2, 1, 1	25.0
11, 16, 35	1, 2, 1	25.0	5, 18, 32	2, 2, 2	25.0

TABLE 16
CON'T.
TOTAL SCORE
CAIN LEVINE 1-2
TRIADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS

Triadic Factors	Levels	% Difference for High $\bar{X}$ Teachers
11, 16, 37	1, 2, 1	25.0
11, 17, 32	1, 2, 1	25.0
11, 18, 30	1, 1, 1	25.0
11, 19, 31	1, 2, 2	25.0
11, 30, 32	1, 1, 1	25.0
11, 30, 37	1, 1, 1	25.0
11, 32, 35	1, 1, 1	25.0
15, 16, 37	1, 2, 1	25.0
15, 17, 32	1, 2, 1	25.0
15, 18, 36	1, 1, 2	25.0
15, 31, 35	1, 2, 1	25.0
16, 17, 19	2, 2, 2	25.0
16, 17, 29	2, 2, 2	25.0
16, 18, 36	2, 1, 2	25.0
16, 18, 37	2, 1, 1	25.0

LOW MEAN GAIN TEACHER FACTORS

Triadic Factors	Levels	% Difference for Low $\bar{X}$ Teachers
5, 18, 36	2, 2, 1	25.0
5, 27, 31	2, 2, 1	25.0
5, 29, 31	2, 1, 1	25.0
5, 29, 32	2, 1, 2	25.0
5, 30, 31	2, 2, 1	25.0
5, 31, 32	2, 1, 2	25.0
5, 31, 33	2, 1, 1	25.0
5, 31, 35	2, 1, 2	25.0
5, 32, 33	2, 2, 1	25.0
6, 16, 29	2, 1, 1	25.0
6, 16, 33	2, 1, 1	25.0
6, 17, 35	2, 1, 2	25.0
6, 17, 36	2, 1, 1	25.0
6, 18, 29	2, 2, 1	25.0
6, 18, 30	2, 2, 2	25.0

TABLE 16
CON'T.
TOTAL SCORE
CAIN LEVINE 1-2
TRIADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS

Triadic Factors	Levels	% Difference for High $\bar{X}$ Teachers
16, 29, 37	2, 2, 1	25.0
16, 31, 35	2, 2, 1	25.0
16, 32, 37	2, 1, 1	25.0
16, 35, 37	2, 1, 1	25.0
17, 18, 32	2, 1, 1	25.0
17, 18, 36	2, 1, 2	25.0
17, 18, 37	2, 1, 1	25.0
17, 19, 36	2, 2, 2	25.0
17, 29, 32	2, 2, 1	25.0
17, 29, 37	2, 2, 1	25.0
17, 31, 37	2, 2, 1	25.0
17, 35, 37	2, 1, 1	25.0
18, 19, 31	1, 2, 2	25.0
18, 19, 37	1, 2, 1	25.0
18, 29, 30	1, 2, 1	25.0

LOW MEAN GAIN TEACHER FACTORS

Triadic Factors	Levels	% Difference for Low $\bar{X}$ Teachers
6, 18, 31	2, 2, 1	25.0
6, 18, 33	2, 2, 1	25.0
6, 18, 35	2, 2, 2	25.0
6, 18, 36	2, 2, 1	25.0
6, 29, 31	2, 1, 1	25.0
6, 30, 36	2, 2, 1	25.0
10, 29, 32	2, 1, 2	25.0
14, 20, 25	2, 1, 2	25.0
14, 31, 38	2, 1, 1	25.0
16, 17, 18	1, 1, 2	25.0
16, 17, 27	1, 1, 2	25.0
16, 18, 30	1, 2, 2	25.0
16, 18, 33	1, 2, 1	25.0
16, 27, 31	1, 2, 1	25.0
16, 29, 31	1, 1, 1	25.0

TABLE 16
CON'T.
TOTAL SCORE
CAIN LEVINE 1-2
TRIADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS

Triadic Factors	Levels	% Difference for High $\bar{X}$ Teachers
18, 29, 31	1, 2, 2	25.0
18, 30, 32	1, 1, 1	25.0
18, 30, 37	1, 1, 1	25.0
18, 31, 37	1, 2, 1	25.0
18, 36, 37	1, 2, 1	25.0
19, 30, 31	2, 1, 2	25.0
19, 32, 37	2, 1, 1	25.0
20, 33, 35	2, 2, 1	25.0
29, 31, 35	2, 2, 1	25.0
29, 35. 37	2, 1, 1	25.0
30, 31, 32	1, 2, 1	25.0
31, 35, 37	2, 1, 1	25.0

LOW MEAN GAIN TEACHER FACTORS

Triadic Factors	Levels	% Difference for Low $\bar{X}$ Teachers
16, 30, 31	1, 2, 1	25.0
16, 33, 35	1, 1, 2	25.0
17, 18, 27	1, 2, 2	25.0
17, 18, 31	1, 2, 1	25.0
17, 18, 33	1, 2, 1	25.0
17, 18, 35	1, 2, 2	25.0
17, 18, 36	1, 2, 1	25.0
17, 31, 33	1, 1, 1	25.0
17, 32, 35	1, 2, 2	25.0
17, 33, 35	1, 1, 2	25.0
17, 33, 36	1, 1, 1	25.0
18, 27, 31	2, 2, 1	25.0
18, 27, 36	2, 2, 1	25.0
18, 29, 32	2, 1, 2	25.0
18, 30, 31	2, 2, 1	25.0

TABLE 16
CON'T.
TOTAL SCORE
CAIN LEVINE 1-2
TRIADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS

Triadic Factors	Levels	% Difference for High $\overline{X}$ Teachers
		NONE

LOW MEAN GAIN TEACHER FACTORS

Triadic Factors	Levels	% Difference for Low $\overline{X}$ Teachers
18, 30, 35	2, 2, 2	25.0
18, 31, 33	2, 1, 1	25.0
18, 33, 35	2, 1, 2	25.0
20, 24, 35	1, 1, 2	25.0
22, 26, 35	2, 2, 2	25.0
27, 29, 31	2, 1, 1	25.0
27, 32, 35	2, 2, 2	25.0
29, 31, 35	1, 1, 2	25.0
29, 32, 33	1, 2, 1	25.0
29, 33, 36	1, 1, 1	25.0
30, 31, 36	2, 1, 1	25.0
30, 33, 35	2, 1, 2	25.0
30, 33, 36	2, 1, 1	25.0
31, 32, 33	1, 2, 1	25.0
31, 33, 35	1, 1, 2	25.0
31, 33, 36	1, 1, 1	25.0
32, 33, 35	2, 1, 2	25.0

The numbers which represent the factors and levels on Table 16 are again coded from Table 9. The first combination of triadic factors noted for the high mean gain teachers are the factors 17, 29, and 35. The levels noted for the three factors are 2, 2, and 1. The first 2 refers to level 2 under factor 17, the second 2 refers to level 2 under factor 29, and the 1 refers to level 1 under factor 35. When Table 9 is consulted, the reader finds that factor 17, level 2 refers to over 10 hours per week in teacher preparation outside the classroom, factor 29, level 2 refers to scores below the median on succorance, and factor 35, level 1 refers to scores above the median on heterosexuality. The column headed % Difference for High Mean Teachers refers to the difference between the percentage of high mean teachers and the percentage of low mean teachers who showed the three factors at the three levels in question in favor of the high teachers. When the two groups of teachers, high mean group and low mean group, were examined with regard to factor 17, level 2, factor 29, level 2, and factor 35, level 1, it is found that after subtracting the percentage of low mean gain teachers who show the factors and levels from the percentage of high mean gain teachers who show the factors and levels the resulting percentage is 50.0. By consulting Table 9 the reader can determine the other combinations of triadic factors and levels which are listed in Table 16 and which discriminated between the high mean gain group and low mean group of teachers.

The Table 16 combinations of factors and levels were all suggested as possible discriminators between the teachers whose students show high mean gain on Total Score from CL2 to CL3 and the teachers whose students show low mean gain on Total Score on CL2 to CL3. Table 17 lists the triadic factors and levels which discriminated between the high mean gain teachers and the low mean gain teachers over both CL1 to CL2 and CL2 to CL3.

The upper portion of Table 17 lists the triadic factors and levels which favored the high mean gain teachers. The lower portion of Table 17 lists

TABLE 17
TOTAL SCORE
CAIN LEVINE 1-2, 2-3
TRIADIC FACTORS

(A) HIGH MEAN GAIN TEACHER FACTORS

TEACHER CL1 TO CL2					TEACHER CL2 TO CL3		
Triadic Factors	Levels	% High $\overline{X}$ Teachers	% Low $\overline{X}$ Teachers	Percent Difference	% High $\overline{X}$ Teachers	% Low $\overline{X}$ Teachers	Percent Difference
16, 19, 35	2, 2, 1	31.3	0	31.3	36.4	0	36.4
22, 27, 35	2, 1, 1	37.5	0	37.5	27.3	0	27.3
6, 16, 35	1, 2, 1	31.3	0	31.3	36.4	4.5	31.9
11, 19, 35	1, 2, 1	43.8	12.5	31.3	36.4	4.5	31.9
6, 17, 19	1, 2, 2	37.5	6.3	31.2	36.4	4.5	31.9
15, 16, 35	1, 2, 1	31.3	0	31.3	31.8	4.5	27.3
19, 31, 35	2, 2, 1	43.8	12.5	31.3	36.4	9.1	27.3
6, 31, 35	1, 2, 1	37.5	12.5	25.0	40.9	9.1	31.8
16, 17, 19	2, 2, 2	25.0	0	25.0	31.8	0	31.8
6, 16, 19	1, 2, 2	31.3	6.3	25.0	40.9	13.6	27.3
6, 16, 31	1, 2, 2	25.0	0	25.0	36.4	9.1	27.3
11, 19, 31	1, 2, 2	31.3	6.3	25.0	31.8	4.5	27.3

TABLE 17
CON'T.
TOTAL SCORE
CAIN LEVINE 1-2, 2-3
TRIADIC FACTORS

(B) LOW MEAN GAIN TEACHER FACTORS

TEACHER CL1 TO CL2					TEACHER CL2 TO CL3		
Triadic Factors	Levels	% High $\overline{X}$ Teachers	% Low $\overline{X}$ Teachers	Percent Difference	% High $\overline{X}$ Teachers	% Low $\overline{X}$ Teachers	Percent Difference
31, 35, 36	1, 2, 1	0	50.0	50.0	4.5	31.8	27.3
27, 31, 35	2, 1, 2	0	37.5	37.5	4.5	40.9	36.4
17, 31, 35	1, 1, 2	18.8	50.0	31.2	9.1	40.9	31.8

the triadic factors and levels which favored the low mean gain teacher group. On the left side of Table 17 are the percentages of teachers in each group, the high mean gain group and the low mean gain group, who showed the factors and levels in question. The teacher groups are based on pupil Total Score gain from CL1 to CL2. The difference between the two percentages is also listed. On the right side of Table 17 are the percentage of teachers in the high mean gain group and the percentage of teachers in the low mean gain group who showed the combination of factors and levels in question. The teacher groups are based on pupil Total Score gain from CL2 to CL3. The difference between the two percentages is also noted. In order to be included in Table 17 a combination of factors and levels had to show a difference of 25.0 percent or more between the percentages of the teacher groups based on pupil Total Score gain for both CL1 to CL2 and CL2 to CL3.

Table 17 lists twelve triads which favored the high mean gain group of teachers:

(1) years teaching experience below the median score, other activities and interests without children, and scores above the median on heterosexuality;

(2) scores on the EPPS characteristic of achievement below the median, scores on the EPPS characteristic of affiliation above the median and scores on heterosexuality above the median;

(3) no children living at home, number of years teaching experience below the median, and scores above the median on heterosexuality;

(4) choice of grade level to teach at preschool through third grade, other activities and interests without children, and scores above the median on heterosexuality;

(5) no children living at home, teachers' preparation hours outside class over 10 per week, and other activities and interests without children;

(6) no experience teaching normal children, number of years teaching experience below the median, and scores above the median on heterosexuality;

(7) other activities and interests without children, scores on abasement below the median, and scores on heterosexuality above the median;

(8) no children living at home, scores on abasement below the median, and scores on heterosexuality above the median;

(9) number of years teaching experience below the median, teachers' preparation outside class over 10 hours per week, and other activities and interests without children;

(10) no children living at home, total years teaching experience below the median, and other activities and interests without children;

(11) no children living at home, total years teaching experience below the median, and scores on abasement below the median;

(12) choice of grade level to teach at preschool through third grade, other activities and interests without children, and scores on abasement below the median.

Table 17 lists three combinations of triadic factors and levels which favored the low mean gain group of teachers:

(1) scores above the median on abasement, below the median on heterosexuality, and above the median on aggression;

(2) scores below the median on affiliation, above the median on abasement, and below the median on heterosexuality;

(3) teachers' preparation outside class less than 10 hours per week, scores above the median on abasement, and below the median on heterosexuality.

Table 17a lists the triads which discriminated between the high mean gain teachers and the low mean gain teachers in the groups established from pupil Total Score gain from CL1 to CL3. The left side of Table 17a lists the combinations of triadic factors and levels which favored the high mean gain teachers. The right side of Table 17a lists the combination of triadic factors and levels which favored the low mean gain teachers.

Table 17a lists over two hundred triadic factors which discriminated in favor of the high mean gain teachers at over a 25 percent difference between the percentage of high mean gain teachers and the percentage of low mean gain teachers. Only the first nineteen triads which favored the high mean gain group at over a 42% difference are listed here. The nineteen most significant triadic combinations of factors were:

(1) a BS or BA degree but no MA degree, no experience teaching EMR's, and scores above the median on the SAQ;

(2) a BS or BA degree but no MA degree, below the median in total years teaching experience, and scores above the median on heterosexuality;

(3) no experience teaching EMR's, scores above the median on heterosexuality and scores above the median on the SAQ;

(4) married, a nonteaching spouse, and scores above the median on achievement;

(5) married, scores above the median on affiliation, and scores above the median on heterosexuality;

(6) a BS or BA degree but no MA degree, no experience teaching EMR's, and scores above the median on heterosexuality;

(7) a BS or BA degree but no MA degree, below the median in total years teaching experience, and scores above the median on the SAQ;

TABLE 17a
TOTAL SCORE
CAIN LEVINE 1-3
TRIADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS

Triadic Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Lo $\overline{X}$ Tchrs.	% Diff.
7, 14, 37	2, 2, 1	50.0	0	50.0
7, 16, 35	2, 2, 1	50.0	0	50.0
14, 35, 37	2, 1, 1	50.0	0	50.0
2, 4, 22	2, 2, 1	50.0	7.1	42.9
2, 27, 35	2, 1, 1	42.9	0	42.9
7, 14, 35	2, 2, 1	42.9	0	42.9
7, 16, 37	2, 2, 1	42.9	0	42.9
7, 35, 37	2, 1, 1	42.9	0	42.9
12, 18, 37	1, 1, 1	42.9	0	42.9
12, 27, 37	1, 1, 1	50.0	7.1	42.9
14, 16, 17	2, 2, 2	42.9	0	42.9
14, 16, 35	2, 2, 1	42.9	0	42.9
14, 16, 37	2, 2, 1	42.9	0	42.9
14, 27, 35	2, 1, 1	42.9	0	42.9
14, 32, 35	2, 2, 1	42.9	0	42.9
16, 17, 31	2, 2, 2	42.9	0	42.9
16, 35, 37	2, 1, 1	42.9	0	42.9

LOW MEAN GAIN TEACHER FACTORS

Triadic Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Lo $\overline{X}$ Tchrs.	% Diff.
17, 31, 35	1, 1, 2	0	57.1	57.1
2, 17, 35	2, 1, 2	0	50.0	50.0
2, 31, 35	2, 1, 2	7.1	57.1	50.0
12, 22, 37	1, 2, 2	0	50.0	50.0
22, 26, 37	2, 1, 2	0	50.0	50.0
27, 31, 35	2, 1, 2	0	50.0	50.0
2, 17, 31	2, 1, 1	7.1	50.0	42.9
2, 22, 27	2, 2, 2	0	42.9	42.9
2, 22, 35	2, 2, 2	0	42.9	42.9
7, 25, 35	2, 1, 2	0	42.9	42.9
12, 26, 27	1, 1, 2	7.1	50.0	42.9
22, 26, 27	2, 1, 2	0	42.9	42.9
22, 27, 37	2, 2, 2	0	42.9	42.9
2, 3, 35	2, 1, 2	7.1	42.9	35.8
2, 17, 27	2, 1, 2	0	35.7	35.7
2, 22, 31	2, 2, 1	7.1	42.9	35.8
2, 22, 37	2, 2, 2	0	35.7	35.7

TABLE 17a
TOTAL SCORE
CAIN LEVINE 1-3
TRIADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS

Triadic Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Lo $\overline{X}$ Tchrs.	% Diff.
26, 27, 36	2, 1, 2	50.0	7.1	42.9
27, 35, 37	1, 1, 1	42.9	0	42.9
2, 27, 29	2, 1, 2	35.7	0	35.7
2, 31, 37	2, 2, 1	35.7	0	35.7
3, 4, 7	2, 2, 2	35.7	0	35.7
3, 4, 35	2, 2, 1	35.7	0	35.7
4, 14, 37	2, 2, 1	35.7	0	35.7
4, 15, 26	2, 3, 2	42.9	7.1	35.8
4, 22, 26	2, 1, 2	42.9	7.1	35.8
4, 22, 36	2, 1, 2	35.7	0	35.7
4, 23, 26	2, 1, 2	42.9	7.1	35.8
4, 26, 27	2, 2, 1	42.9	7.1	35.8
4, 26, 31	2, 2, 2	35.7	0	35.7
4, 26, 35	2, 2, 1	35.7	0	35.7
4, 26, 36	2, 2, 2	42.9	7.1	35.8
4, 27, 36	2, 1, 2	35.7	0	35.7
4, 35, 37	2, 1, 1	35.7	0	35.7

LOW MEAN GAIN TEACHER FACTORS

Triadic Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Lo $\overline{X}$ Tchrs.	% Diff.
2, 26, 37	2, 1, 2	0	35.7	35.7
2, 27, 31	2, 2, 1	7.1	42.9	35.8
2, 27, 35	2, 2, 2	7.1	42.9	35.8
3, 27, 31	1, 2, 1	0	35.7	35.7
10, 21, 31	1, 1, 1	0	35.7	35.7
11, 27, 35	1, 2, 2	7.1	42.9	35.8
11, 31, 37	1, 1, 2	7.1	42.9	35.8
15, 22, 27	2, 2, 2	0	35.7	35.7
17, 26, 31	1, 2, 1	0	35.7	35.7
17, 27, 31	1, 2, 1	0	35.7	35.7
17, 27, 35	1, 2, 2	0	35.7	35.7
17, 31, 37	1, 1, 2	0	35.7	35.7
17, 35, 37	1, 2, 2	0	35.7	35.7
19, 26, 27	1, 1, 2	0	35.7	35.7
19, 31, 37	1, 1, 2	7.1	42.9	35.8
22, 23, 37	2, 1, 2	0	35.7	35.7
22, 26, 35	2, 1, 2	0	35.7	35.7

TABLE 17a
TOTAL SCORE
CAIN LEVINE 1-3
TRIADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS

Triadic Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Lo $\overline{X}$ Tchrs.	% Diff.
7, 14, 17	2, 2, 2	42.9	7.1	35.8
7, 15, 35	2, 3, 1	35.7	0	35.7
7, 16, 17	2, 2, 2	42.9	7.1	35.8
7, 16, 31	2, 2, 2	42.9	7.1	35.8
7, 17, 31	2, 2, 2	35.7	0	35.7
7, 17, 37	2, 2, 1	35.7	0	35.7
7, 22, 35	2, 1, 1	35.7	0	35.7
7, 23, 35	2, 1, 1	35.7	0	35.7
7, 27, 35	2, 1, 1	35.7	0	35.7
7, 27, 37	2, 1, 1	35.7	0	35.7
7, 31, 35	2, 2, 1	35.7	0	35.7
7, 35, 38	2, 1, 2	35.7	0	35.7
12, 17, 37	1, 2, 1	35.7	0	35.7
14, 15, 37	2, 3, 1	35.7	0	35.7
14, 17, 31	2, 2, 2	35.7	0	35.7
14, 17, 35	2, 2, 1	35.7	0	35.7
14, 17, 37	2, 2, 1	35.7	0	35.7

LOW MEAN GAIN TEACHER FACTORS

Triadic Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Lo $\overline{X}$ Tchrs.	% Diff.
22, 27, 31	2, 2, 1	0	35.7	35.7
22, 27, 35	2, 2, 2	0	35.7	35.7
22, 27, 38	2, 2, 1	0	35.7	35.7
22, 29, 32	2, 2, 1	0	35.7	35.7
22, 31, 35	2, 1, 2	7.1	42.9	35.8
22, 32, 37	2, 1, 2	0	35.7	35.7
22, 35, 37	2, 2, 2	0	35.7	35.7
23, 26, 37	1, 1, 2	0	35.7	35.7
23, 31, 35	1, 1, 2	7.1	42.9	35.8
25, 27, 31	1, 2, 1	0	35.7	35.7
25, 27, 35	1, 2, 2	0	35.7	35.7
25, 27, 37	1, 2, 2	0	35.7	35.7
25, 31, 35	1, 1, 2	0	35.7	35.7
26, 35, 37	1, 2, 2	0	35.7	35.7
27, 31, 37	2, 1, 2	7.1	42.9	35.8
27, 35, 37	2, 2, 2	7.1	42.9	35.8
2, 15, 17	2, 2, 1	0	28.6	28.6

TABLE 17a
TOTAL SCORE
CAIN LEVINE 1-3
TRIADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS					LOW MEAN GAIN TEACHER FACTORS				
Triadic Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Lo $\overline{X}$ Tchrs.	% Diff.	Triadic Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Lo $\overline{X}$ Tchrs.	% Diff.
14, 27, 35	2, 1, 1	35.7	0	35.7	2, 15, 22	2, 2, 2	0	28.6	28.6
14, 31, 32	2, 2, 2	42.9	7.1	35.8	2, 15, 27	2, 2, 2	0	28.6	28.6
14, 31, 35	2, 2, 1	35.7	0	35.7	2, 15, 31	2, 2, 1	0	28.6	28.6
14, 31, 37	2, 2, 1	35.7	0	35.7	2, 15, 35	2, 2, 2	0	28.6	28.6
15, 23, 27	3, 1, 1	35.7	0	35.7	2, 17, 35	2, 1, 2	0	28.6	28.6
15, 23, 35	3, 1, 1	35.7	0	35.7	2, 25, 27	2, 1, 2	7.1	35.7	28.6
15, 26, 31	3, 2, 2	35.7	0	35.7	2, 26, 27	2, 1, 2	7.1	35.7	28.6
15, 26, 35	3, 2, 1	35.7	0	35.7	2, 26, 35	2, 1, 2	0	28.6	28.6
15, 26, 36	3, 2, 2	35.7	0	35.7	2, 27, 37	2, 2, 2	14.3	42.9	28.6
15, 27, 31	3, 1, 2	35.7	0	35.7	2, 31, 37	2, 1, 2	7.1	35.7	28.6
15, 27, 35	2, 1, 1	35.7	0	35.7	10, 21, 32	1, 1, 1	7.1	35.7	28.6
15, 27, 36	3, 1, 2	35.7	0	35.7	11, 19, 32	1, 1, 1	7.1	35.7	28.6
16, 17, 22	2, 2, 1	35.7	0	35.7	11, 25, 35	1, 1, 2	7.1	35.7	28.6
16, 17, 37	2, 2, 1	35.7	0	35.7	11, 26, 31	1, 2, 1	7.1	35.7	28.6
16, 22, 31	2, 1, 2	35.7	0	35.7	12, 27, 32	1, 2, 1	7.1	35.7	28.6
16, 27, 35	2, 1, 1	35.7	0	35.7	15, 17, 31	2, 1, 1	0	28.6	28.6
16, 30, 35	2, 1, 1	35.7	0	35.7	15, 17, 35	2, 1, 2	0	28.6	28.6

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TABLE 17a
TOTAL SCORE
CAIN LEVINE 1-3
TRIADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS

Triadic Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Lo $\overline{X}$ Tchrs.	% Diff.
16, 31, 35	2, 2, 1	35.7	0	35.7
16, 35, 38	2, 1, 2	35.7	0	35.7
17, 35, 37	2, 1, 1	35.7	0	35.7
23, 25, 26	1, 2, 1	42.9	7.1	35.8
23, 26, 27	1, 2, 1	42.9	7.1	35.8
23, 26, 31	1, 2, 2	35.7	0	35.7
23, 26, 35	1, 2, 1	35.7	0	35.7
23, 26, 36	1, 2, 2	42.9	7.1	35.8
23, 27, 35	1, 1, 1	35.7	0	35.7
26, 27, 31	2, 1, 2	35.7	0	35.7
26, 27, 35	2, 1, 1	35.7	0	35.7
26, 31, 36	2, 2, 2	35.7	0	35.7
26, 36, 38	2, 2, 1	35.7	0	35.7
27, 31, 35	1, 2, 1	35.7	0	35.7
27, 35, 36	1, 1, 2	35.7	0	35.7
27, 36, 37	1, 2, 1	42.9	7.1	35.8
31, 35, 37	2, 1, 1	42.9	7.1	35.8

LOW MEAN GAIN TEACHER FACTORS

Triadic Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Lo $\overline{X}$ Tchrs.	% Diff.
15, 22, 26	2, 2, 1	0	28.6	28.6
15, 22, 37	2, 2, 2	0	28.6	28.6
15, 26, 27	2, 1, 2	0	28.6	28.6
15, 26, 37	2, 1, 2	0	28.6	28.6
15, 27, 37	2, 2, 2	0	28.6	28.6
17, 23, 35	1, 1, 2	0	28.6	28.6
20, 21, 32	1, 1, 1	0	28.6	28.6
22, 23, 26	2, 1, 1	7.1	35.7	28.6
22, 23, 27	2, 1, 2	0	28.6	28.6
22, 25, 27	2, 1, 2	0	28.6	28.6
22, 25, 35	2, 1, 2	0	28.6	28.6
22, 25, 37	2, 1, 2	0	28.6	28.6
22, 31, 37	2, 1, 2	0	28.6	28.6
23, 25, 27	1, 1, 2	0	28.6	28.6
23, 25, 35	1, 1, 2	7.1	35.7	28.6
23, 26, 27	1, 1, 2	0	28.6	28.6
23, 26, 35	1, 1, 2	0	28.6	28.6

TABLE 17a
TOTAL SCORE
CAIN LEVINE 1-3
TRIADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS

Triadic Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Lo $\overline{X}$ Tchrs.	% Diff.
2, 14, 26	2, 2, 2	35.7	7.1	28.6
3, 4, 14	2, 2, 2	35.7	7.1	28.6
3, 4, 17	2, 2, 2	28.6	0	28.6
3, 4, 22	2, 2, 1	35.7	7.1	28.6
3, 4, 26	2, 2, 2	42.9	14.3	28.6
3, 4, 31	2, 2, 2	28.6	0	28.6
3, 4, 36	2, 2, 2	28.6	0	28.6
3, 4, 37	2, 2, 1	35.7	7.1	28.6
3, 7, 14	2, 2, 2	35.7	7.1	28.6
3, 7, 17	2, 2, 2	28.6	0	28.6
3, 7, 22	2, 2, 1	35.7	7.1	28.6
3, 7, 26	2, 2, 2	35.7	7.1	28.6
3, 7, 35	2, 2, 1	28.6	0	28.6
3, 7, 37	2, 2, 1	28.6	0	28.6
3, 14, 17	2, 2, 2	28.6	0	28.6
3, 14, 37	2, 2, 1	28.6	0	28.6
3, 16, 17	2, 2, 2	28.6	0	28.6

LOW MEAN GAIN TEACHER FACTORS

Triadic Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Lo $\overline{X}$ Tchrs.	% Diff.
23, 27, 31	1, 2, 1	7.1	35.7	28.6
23, 27, 35	1, 2, 2	7.1	35.7	28.6
23, 27, 37	1, 2, 2	14.3	42.9	28.6
23, 31, 37	1, 1, 2	7.1	35.7	28.6
23, 35, 37	1, 2, 2	14.3	42.9	28.6
25, 26, 37	1, 1, 2	0	28.6	28.6
25, 31, 37	1, 1, 2	0	28.6	28.6
25, 35, 37	1, 2, 2	7.1	35.7	28.6
26, 27, 35	1, 2, 2	0	28.6	28.6
27, 34, 35	2, 1, 2	7.1	35.7	28.6

TABLE 17a
CON'T.
TOTAL SCORE
CAIN LEVINE 1-3
TRIADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS

Triadic Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Lo $\overline{X}$ Tchrs.	% Diff.
3, 26, 35	2, 2, 1	28.6	0	28.6
3, 26, 36	2, 2, 2	28.6	0	28.6
3, 35, 37	2, 1, 1	28.6	0	28.6
4, 7, 22	2, 2, 1	35.7	7.1	28.6
4, 7, 35	2, 2, 1	28.6	0	28.6
4, 14, 17	2, 2, 2	28.6	0	28.6
4, 14, 22	2, 2, 1	35.7	7.1	28.6
4, 14, 26	2, 2, 2	35.7	7.1	28.6
4, 14, 27	2, 2, 1	28.6	0	28.6
4, 14, 31	2, 2, 2	28.6	0	28.6
4, 14, 35	2, 2, 1	28.6	0	28.6
4, 15, 27	2, 3, 1	35.7	7.1	28.6
4, 15, 31	2, 3, 2	28.6	0	28.6
4, 15, 35	2, 3, 1	28.6	0	28.6
4, 15, 36	2, 3, 2	28.6	0	28.6
4, 16, 17	2, 2, 2	35.7	7.1	28.6
4, 16, 31	2, 2, 2	28.6	0	28.6

LOW MEAN GAIN TEACHER FACTORS

Triadic Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Lo $\overline{X}$ Tchrs.	% Diff.

NONE

TABLE 17a
CON'T.
TOTAL SCORE
CAIN LEVINE 1-3
TRIADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS

Triadic Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Lo $\overline{X}$ Tchrs.	% Diff.
4, 17, 22	2, 2, 1	28.6	0	28.6
4, 17, 26	2, 2, 2	28.6	0	28.6
4, 17, 31	2, 2, 2	28.6	0	28.6
4, 22, 23	2, 1, 1	35.7	7.1	28.6
4, 22, 27	2, 1, 1	28.6	0	28.6
4, 22, 31	2, 1, 2	28.6	0	28.6
4, 22, 35	2, 1, 1	28.6	0	28.6
4, 22, 37	2, 1, 1	28.6	0	28.6
4, 23, 27	2, 1, 1	28.6	0	28.6
4, 23, 31	2, 1, 2	28.6	0	28.6
4, 23, 35	2, 1, 1	28.6	0	28.6
4, 27, 31	2, 1, 2	28.6	0	28.6
4, 27, 35	2, 1, 1	28.6	0	28.6
4, 27, 37	2, 1, 1	35.7	7.1	28.6
4, 31, 35	2, 2, 1	28.6	0	28.6
4, 31, 36	2, 2, 2	28.6	0	28.6
4, 31, 37	2, 2, 1	28.6	0	28.6

LOW MEAN GAIN TEACHER FACTORS

Triadic Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Lo $\overline{X}$ Tchrs.	% Diff.

NONE

TABLE 17a
CON'T.
TOTAL SCORE
CAIN LEVINE 1-3
TRIADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS

Triadic Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Lo $\overline{X}$ Tchrs.	% Diff.
7, 9, 31	2, 1, 2	35.7	7.1	28.6
7, 14, 27	2, 2, 1	35.7	7.1	28.6
7, 14, 31	2, 2, 2	35.7	7.1	28.6
7, 15, 16	2, 3, 2	28.6	0	28.6
7, 15, 27	2, 3, 1	28.6	0	28.6
7, 15, 37	2, 3, 1	28.6	0	28.6
7, 16, 22	2, 2, 1	35.7	7.1	28.6
7, 16, 27	2, 2, 1	35.7	7.1	28.6
7, 22, 31	2, 1, 2	28.6	0	28.6
7, 22, 36	2, 1, 2	28.6	0	28.6
7, 26, 27	2, 2, 1	28.6	0	28.6
7, 26, 35	2, 2, 1	28.6	0	28.6
7, 31, 37	2, 2, 1	28.6	0	28.6
11, 22, 28	1, 1, 2	35.7	7.1	28.6
14, 15, 35	2, 3, 1	28.6	0	28.6
14, 16, 31	2, 2, 2	35.7	7.1	28.6
14, 20, 35	2, 1, 2	35.7	7.1	28.6

LOW MEAN GAIN TEACHER FACTORS

Triadic Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Lo $\overline{X}$ Tchrs.	% Diff.

NONE

TABLE 17a
CON'T.
TOTAL SCORE
CAIN LEVINE 1-3
TRIADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS

Triadic Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Lo $\overline{X}$ Tchrs.	% Diff.
14, 22, 31	2, 1, 2	28.6	0	28.6
14, 22, 35	2, 1, 1	28.6	0	28.6
14, 22, 36	2, 1, 2	28.6	0	28.6
14, 23, 35	2, 1, 1	28.6	0	28.6
14, 23, 37	2, 1, 1	28.6	0	28.6
14, 26, 36	2, 1, 2	28.6	0	28.6
14, 35, 38	2, 1, 2	28.6	0	28.6
14, 36, 37	2, 2, 1	28.6	0	28.6
14, 37, 38	2, 1, 2	28.6	0	28.6
15, 16, 23	3, 2, 1	28.6	0	28.6
15, 16, 27	3, 2, 1	28.6	0	28.6
15, 16, 31	3, 2, 2	28.6	0	28.6
15, 16, 35	3, 2, 1	28.6	0	28.6
15, 16, 38	3, 2, 2	28.6	0	28.6
15, 23, 26	3, 1, 2	35.7	7.1	28.6
15, 23, 31	3, 1, 2	28.6	0	28.6
15, 23, 38	3, 1, 2	28.6	0	28.6

LOW MEAN GAIN TEACHER FACTORS

Triadic Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Diff.

NONE

TABLE 17a
CON'T.
TOTAL SCORE
CAIN LEVINE 1-3
TRIADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS

Triadic Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Lo $\overline{X}$ Tchrs.	% Diff.
15, 26, 27	3, 2, 1	42.9	14.3	28.6
15, 27, 37	2, 1, 1	35.7	7.1	28.6
15, 31, 35	3, 2, 1	35.7	7.1	28.6
15, 31, 36	3, 2, 2	28.6	0	28.6
15, 35, 37	3, 1, 1	35.7	7.1	28.6
16, 17, 26	2, 2, 2	28.6	0	28.6
16, 17, 27	2, 2, 1	28.6	0	28.6
16, 22, 35	2, 1, 1	28.6	0	28.6
16, 23, 35	2, 1, 1	28.6	0	28.6
16, 26, 31	2, 2, 2	28.6	0	28.6
16, 31, 37	2, 2, 1	28.6	0	28.6
17, 22, 31	2, 1, 2	28.6	0	28.6
17, 23, 26	2, 1, 2	35.7	7.1	28.6
17, 23, 27	2, 1, 1	28.6	0	28.6
17, 26, 27	2, 1, 1	28.6	0	28.6
17, 26, 36	2, 2, 2	28.6	0	28.6
17, 27, 36	2, 1, 2	28.6	0	28.6

LOW MEAN GAIN TEACHER FACTORS

Triadic Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Lo $\overline{X}$ Tchrs.	% Diff.

NONE

TABLE 17a
CON'T.
TOTAL SCORE
CAIN LEVINE 1-3
TRIADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS

Triadic Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Lo $\overline{X}$ Tchrs.	% Diff.
17, 27, 37	2, 1, 1	28.6	0	28.6
17, 31, 37	2, 2, 1	28.6	0	28.6
22, 23, 31	1, 1, 2	28.6	0	28.6
22, 23, 35	1, 1, 1	28.6	0	28.6
22, 23, 36	1, 1, 2	35.7	7.1	28.6
22, 31, 36	1, 2, 2	28.6	0	28.6
23, 27, 37	1, 1, 1	35.7	7.1	28.6
23, 35, 37	1, 1, 1	28.6	0	28.6
23, 35, 38	1, 1, 2	28.6	0	28.6
26, 31, 35	2, 2, 1	28.6	0	28.6
26, 35, 36	2, 1, 2	28.6	0	28.6
27, 31, 36	1, 2, 2	35.7	7.1	28.6
27, 31, 37	1, 2, 1	28.6	0	28.6
27, 35, 38	1, 1, 2	28.6	0	28.6
31, 32, 37	2, 2, 1	35.7	7.1	28.6
35, 36, 37	1, 2, 1	28.6	0	28.6

LOW MEAN GAIN TEACHER FACTORS

Triadic Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Lo $\overline{X}$ Tchrs.	% Diff.

NONE

(8) a BS or BA degree but no MA degree, scores above the median on heterosexuality, and scores above the median on the SAQ;

(9) preference to teach TMR's, other occupational experience with children, and scores above the median on the SAQ;

(10) preference to teach TMR's, scores above the median on affiliation, and scores above the median on the SAQ;

(11) no experience teaching EMR's, below the median in total years teaching experience, and over 10 hours per week of teachers' preparation outside the classroom;

(12) no experience teaching EMR's, below the median in total years teaching experience, and scores above the median on heterosexuality;

(13) no experience teaching EMR's, scores below the median in total years teaching experience, and scores above the median on the SAQ;

(14) no experience teaching EMR's, scores above the median on affiliation, and scores above the median on heterosexuality;

(15) no experience teaching EMR's, scores below the median on nurturance, and scores above the median on heterosexuality;

(16) below the median in total years teaching experience, over 10 hours per week of teachers' preparation outside the classroom, and scores below the median on abasement.

(17) below the median in total years teaching experience, scores above the median on heterosexuality, and scores above the median on the SAQ;

(18) scores below the median on autonomy, above the median on affiliation and below the median on aggression;

(19) scores above the median on affiliation, above the median on heterosexuality and above the median on the SAQ.

Ninety-five combinations of triadic factors were found to discriminate in favor of the low mean gain teacher group in Table 17a. Only the first thirteen triadic factors which favored the low mean gain group at over a 42% difference between the percentage of high mean gain teachers and low mean gain teachers are presented here. The low mean gain triadic factors were:

(1) less than 10 hours per week of teachers' preparation outside the classroom, scores above the median on abasement and below the median on heterosexuality;

(2) married, less than 10 hours per week of teachers' preparation outside the classroom, and scores below the median on heterosexuality;

(3) married, scores above the median on abasement, and below the median on heterosexuality;

(4) preference to teach TMR children, scores above the median on autonomy, and below the median on the SAQ;

(5) scores below the median on achievement, above the median on autonomy, and below the median on the SAQ;

(6) scores below the median on affiliation, above the median on abasement, and below the median on heterosexuality;

(7) married, less than 10 hours per week of teachers' preparation outside the classroom, and scores above the median on abasement;

(8) married, scores below the median on achievement, and scores below the median on affiliation;

(9) married, scores below the median on achievement, and scores below the median on heterosexuality;

(10) a BS or BA degree but no MA degree, scores above the median on exhibition, and scores below the median on heterosexuality;

(11) preference to teach TMR children, scores above the median on autonomy, and scores below the median on affiliation;

(12) scores below the median on achievement, above the median on autonomy, and below the median on affiliation;

(13) scores below the median on achievement, below the median on affiliation and below the median on the SAQ.

TOTAL SCORE SUMMARY

This section has described the process whereby groups of teachers were established on the basis of mean pupil Total Score gain on the Cain Levine Competency Scale. Two groups of teachers, a high mean gain group and a low mean gain group were established for each of three Cain Levine comparisons: CL1 to CL2, CL2 to CL3, and CL1 to CL3 (i.e., first year gain, second year gain, and first and second year gain).

Teacher information concerning attitudes, personality, and biographical information was coded by the investigators and examined by the IBM 360:67 computer to determine if there were differences between the teachers whose students showed high gain on the Cain Levine Total Score compared with the teachers whose students showed little or no gain on the Cain Levine Total Score.

Single factors, and combinations of dyadic and triadic factors were all examined. Whenever a difference of twenty-five percent or more occurred between the extreme teacher groups on both of the teacher groups established from class scores on CL1 to CL2 and CL2 to CL3, or the teacher groups established from class scores on CL1 to CL3, the factor or combination of factors which showed the difference was hypothesized as a discriminator between the teacher groups.

Results were presented which listed the single factors and dyadic and triadic factors which discriminated between the teacher groups selected on the basis of class Total Score gain from CL1 to CL2, from CL2 to CL3, and from CL1 to CL3.

Single factors were found which discriminated between the groups of teachers on the attitude score on the SAQ; the personality variables on the EPPS of heterosexuality, abasement, affiliation, achievement, and autonomy; and biographical information concerning spouse's occupation, years of teaching experience with normal children, and hours of teacher preparation outside the classroom.

Dyadic factors were found which discriminated between the groups of teachers on the attitude score on the SAQ in combination with each of the following personality variables: achievement, deference, autonomy, affiliation, abasement, and heterosexuality; and the attitude score on the SAQ in combination with biographical data on spouse's occupation, college degree earned, years of teaching experience with normal children, and hours of teacher preparation outside the classroom.

Dyadic factors were found which discriminated between the groups of teachers on a number of personality variables. The variable of heterosexuality was found to discriminate between the teachers in combination with each of the following personality variables: achievement, autonomy, affiliation, succorance, dominance, abasement, and aggression. The variable of abasement was found to discriminate in combination with each of the following variables: achievement, exhibition, autonomy, affiliation, and succorance. Autonomy was found to discriminate in combination with each of the following: achievement, deference, and affiliation. Achievement was found to discriminate in combination with affiliation.

Dyadic factors were also found which discriminated between the groups of teachers on a number of personality variables in combination with variables on biographical data. The personality characteristic of heterosexuality was found in combination with each of the following: spouse's occupation, choice of grade level to teach, experience teaching EMR children, years of teaching normal children, total years of teaching experience, teacher preparation hours outside class, other activities and interests, and age. Abasement, autonomy and affiliation were each found to discriminate in combination with each of the following: spouse's occupation, years of teaching normal children, and teacher preparation hours outside class. Achievement was found to discriminate in combination with spouse's occupation and teacher preparation hours outside class. Aggression was found to discriminate in combination with years teaching normal children.

Dyadic factors were also found which discriminated between the groups of teachers on variables concerned with biographical information. The variable teacher preparation hours outside class was found to discriminate in combination with spouse's occupation, experience teaching EMR children, and other activities and interests. Marital status was found to discriminate in combination with years of teaching normal children.

Over 300 triadic factors discriminated between the groups of teachers. Only the results of the best thirty-two triadic factors are summarized here. Triadic factors were found which discriminated between the groups of teachers on the attitude score on the SAQ in combination with the following personality variables: affiliation and heterosexuality, achievement and autonomy, and achievement and affiliation.

Triadic factors were found which discriminated between the teachers on the attitude score on the SAQ in combination with one personality variable and one variable on biographical data. The SAQ score and the score on heterosexuality combined with each of the following variables: college degree earned, experience teaching EMR children, and total years of teaching experience.

The SAQ score and choice of type of child to teach combined with each of the personality variables of achievement and affiliation.

Triadic factors were also found which discriminated between the teachers on the SAQ score in combination with two variables concerning biographical data. The SAQ score and college degree earned combined with both experience teaching EMR children and total years teaching experience. The SAQ score also combined with choice of type of child to teach and other occupational experience as well as experience teaching EMR children and total years of teaching experience.

Triadic factors were found which discriminated between the teachers on three personality factors. Affiliation was found in combination with autonomy and aggression, abasement and heterosexuality, and autonomy and achievement.

Triads were found which discriminated between the teachers on two personality factors and one factor concerning biographical data. The personality variable heterosexuality was found in combination with achievement and marital status, exhibition and college degree earned, affiliation and experience teaching EMR children, affiliation and marital status, abasement and marital status, abasement and teacher preparation hours outside class, and nurturance and experience teaching EMR children. The personality variable of affiliation was found in combination with achievement and marital status, and autonomy and choice of type of child to teach.

Triads were also found which discriminated between the teachers on one personality factor and two factors concerning biographical data. The personality variable of heterosexuality combined with college degree earned and experience teaching EMR children, college degree earned and total years of teaching experience, experience teaching EMR children and total years of teaching experience, and marital status and teacher preparation hours outside the classroom. The personality variable of abasement combined with marital status and teacher preparation outside the classroom, and total year of teaching experience and teacher preparation outside the classroom. The personality variable of achievement combined with marital status and spouse's occupation.

One triad was found which discriminated between the teachers on three factors concerning biographical data. The three factors were: experience teaching EMR children, total years of teaching experience and teacher preparation hours outside the classroom.

COMMUNICATION

RESULTS: COMMUNICATION SCORE COMPARISONS

The sample of teachers selected on the basis of pupil gain on Communication from CL1 to CL2 consisted of thirty-nine teachers of TMR children. Only those teachers who had administered CLs to the same children in the fall of 1965 and the fall of 1966 were included in the sample. A class mean percentage gain score was computed on pupil gain in Communication for each of the thirty-nine teachers. The class means were then ranked from the highest mean gain class to the lowest mean gain class. Since the group differences program required an equal number in each group for the comparison process, sixteen teachers were selected from each extreme of the class mean distribution. Therefore, thirty-two teachers were included in the group differences sample: sixteen high mean percentage gain class teachers and sixteen low mean percentage gain class teachers. The seven teachers whose class means clustered around the median were eliminated to maintain greater difference between the two teacher groups.

The sample of teachers selected on the basis of pupil gain on Communication from CL2 to CL3 consisted of fifty-nine teachers of TMR children. Only those teachers who had administered CLs to the same children in the fall of 1966 and the spring of 1967 were included in the sample. A class mean percentage gain score was computed on pupil gain in Communication for each of the fifty-nine teachers. The class means were then ranked from the highest to the lowest mean gain class and twenty-four teachers were selected from each extreme of the class mean distribution. Therefore, forty-eight teachers were included in the group differences sample: twenty-four high mean percentage gain class teachers and twenty-four low mean percentage gain class teachers. The eleven teachers whose class means clustered around the median were eliminated to maintain greater difference between the two teacher groups.

The sample of teachers selected on the basis of pupil gain on Communication from CL1 to CL3 was composed of thirty-three teachers of TMR children. Only those teachers who had administered CLs to the same children in the fall of 1965 and the spring of 1967 were included in the sample. A class mean percentage gain score was computed on pupil gain in Communication for each of the thirty-three teachers. The class means were then ranked from the highest to the lowest mean gain class and fourteen teachers were selected from each extreme of the class mean distribution. Therefore, twenty-eight teachers were included in the group differences sample: fourteen high mean percentage gain class teachers and fourteen low mean percentage gain class teachers. The five teachers whose class means clustered around the median were eliminated to maintain greater difference between the two teacher groups.

The procedure followed in the group differences program for Communication is illustrated by Figure 5. The information on teacher attitudes, personality, and biographical data was included in a pool of teacher variables. The Communication mean percentage gain on the CL was computed for pupils on CL1 to CL2, CL2 to CL3, and CL1 to CL3 in all the classes. Two teacher groups were established as described above on the basis of either a high Communication mean gain class or a low Communication mean gain class over CL1 to CL2; similarly, two teacher groups were also established for each of CL2 to CL3 and CL1 to CL3.

Once the teacher groups were established, the computer Search for Group Differences program was run to select from the pool of teacher variables single factors, and combinations of dyadic and triadic factors which discriminated between the high and low mean gain class teacher groups. Whenever single factors, dyadic factors, and triadic factors were found to discriminate between the two teacher groups involved in the CL1 to CL2 administrations, the same factors were examined for the teacher groups involved in the CL2 to CL3 administrations. Only those factors which discriminated between the teacher groups established from both CL1 to CL2 and CL2 to CL3 were hypothesized as showing the closest relationship to growth in Communication.

Since the pupil gain scores from CL1 to CL3 covered a period of one and one-half years, the gain scores for this period were assumed to be the most stable of the CL comparisons. Therefore, a separate group differences analysis was made of the teacher groups established on the basis of the class mean percentage gain scores from CL1 to CL3.

The single factors, dyadic factors, and triadic factors which discriminated between the teacher groups over the Communication scores from CL1 to CL3 were also hypothesized as the significant teacher characteristics to consider.

SELECTION OF TEACHER FACTORS RELATING TO PUPIL GROWTH ON COMMUNICATION FOR THE GAIN LEVINE.

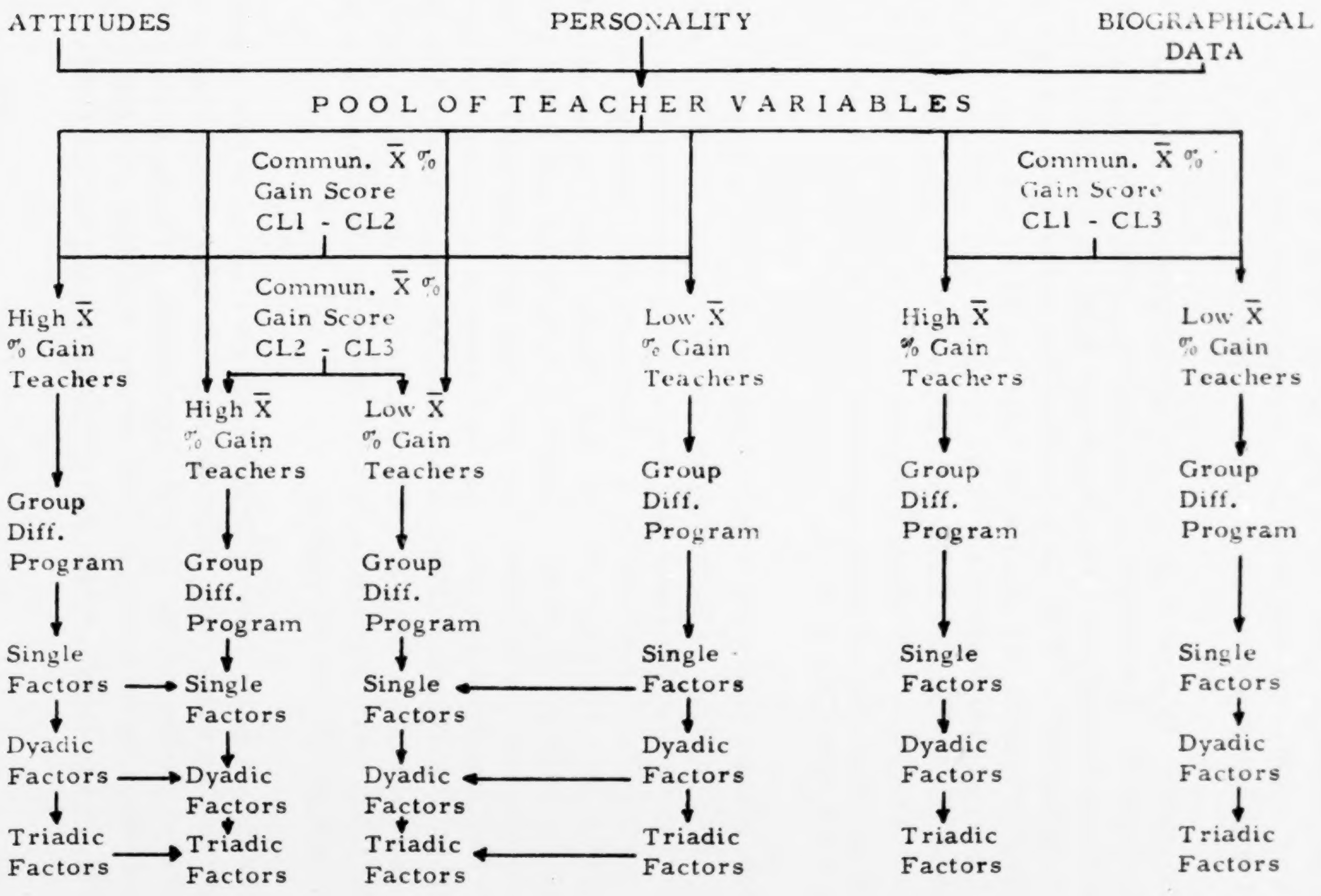
ATTITUDES
PERSONALITY
BIOGRAPHICAL DATA
POOL OF TEACHER VARIABLES
Commun. X̄ % Gain Score CL1 - CL2
Commun. X̄ % Gain Score CL1 - CL3
Commun. X̄ % Gain Score CL2 - CL3
High X̄ % Gain Teachers
Low X̄ % Gain Teachers
High X̄ % Gain Teachers
Low X̄ % Gain Teachers
High X̄ % Gain Teachers
Low X̄ % Gain Teachers
Group Diff. Program
Single Factors
Dyadic Factors
Triadic Factors

Figure 5:

Single Factor Results

Table 18 lists the single factors which discriminated between the high mean gain teachers and low mean gain teachers in the groups established on the basis of pupil Communication gain scores from CL1 to CL2.

The left side of Table 18 lists the factor number and levels which discriminated between the two teacher groups in favor of the group of teachers whose students showed a high mean gain on Communication from CL1 to CL2. The first factor is listed as factor 16 and the level represented is level 2. By referring to Table 8, the reader will note that factor 16, level 2, refers to total years teaching experience below the median. The column headed by % Difference for High Mean Teachers refers to the difference between the percentage of high mean gain teachers and the percentage of low mean gain teachers who showed factor 16 at level 2. The figure in the column was computed by subtracting the percent of teachers in the low mean gain group who showed the factor and level in question from the percent of teachers in the high mean gain group who showed the factor and level in question. The factors which showed the greatest difference were the most discriminating factors between the two teacher groups.

The right side of Table 18 lists the factor number of levels which discriminated between the two teacher groups in favor of the group of teachers whose students showed a low mean gain on Communication from CL1 to CL2. The right side of Table 18 is constructed in a similar manner to the left side of Table 18. However, the percent difference between the high mean gain group of teachers and the low mean gain group of teachers always favors the low mean gain group of teachers.

The Table 18 factors and levels were all suggested as possible discriminators between the teachers whose students showed high mean gain on Communication from CL2 to CL3 and the teachers whose students showed low mean gain on Communication from CL2 to CL3. However, none of the Table 18 factors and levels were found to discriminate between the two teacher groups established from pupil Communication gain from CL2 to CL3.

TABLE 18
COMMUNICATION
GAIN LEVINE 1-2
SINGLE FACTORS

HIGH MEAN GAIN TEACHER FACTORS			LOW MEAN GAIN TEACHER FACTORS		
Factor	Level	% Difference for High $\overline{X}$ Teachers	Factor	Level	% Difference for Low $\overline{X}$ Teachers
16	2	37.5	16	1	37.5
38	2	37.5	19	1	37.5
19	2	31.3	38	1	37.5
7	2	25.0	17	1	25.0
36	2	25.0	36	1	25.0

Table 19 lists the single factors which discriminated between the high mean gain teachers and the low mean gain teachers in the groups based on pupil Communication gain from CL1 to CL3. The upper portion of Table 19 lists the factor number and levels which were found to discriminate between the two teacher groups in favor of the high mean gain teachers.

The following factors and levels were found to discriminate between the teacher groups in favor of the high mean teachers:

(1) no children in the family;

(2) scores above the median on achievement;

(3) scores below the median on abasement;

(4) unmarried, widowed, divorced, or separated;

(5) no spouse;

(6) no children living at home;

(7) preference to teacher other than TMR children;

(8) no experience teaching TMR children;

(9) below the median scores on the MTAI;

(10) below the median scores on dominance.

The lower portion of Table 19 lists the factors and levels which were found to discriminate between the two teacher groups in favor of the low mean gain teachers. The following factors and levels were found to discriminate between the groups in favor of the low mean gain teachers:

(1) a professional spouse;

(2) a student teaching experience in kindergarten through third grade;

TABLE 19

COMMUNICATION

GAIN LEVINE 1-3

SINGLE FACTORS

(A) HIGH MEAN GAIN TEACHER FACTORS

Factor	Level	% High Mean Teachers	% Low Mean Teachers	Percent Difference
5	1	57.1	21.4	35.7
22	1	78.6	42.9	35.7
31	2	57.1	21.4	35.7
2	1	35.7	7.1	28.6
3	3	35.7	7.1	28.6
6	1	57.1	28.6	28.6
12	2	28.6	0	28.6
14	2	71.4	42.9	28.6
21	2	64.3	35.7	28.6
30	2	64.3	35.7	28.6

(B) LOW MEAN GAIN TEACHER FACTORS

Factor	Level	% High Mean Teachers	% Low Mean Teachers	Percent Difference
3	1	28.6	64.3	35.7
9	1	50	85.7	35.7
11	1	50	85.7	35.7
22	2	21.4	57.1	35.7
31	1	42.9	78.6	35.7
2	2	64.3	92.9	28.6
21	1	35.7	64.3	28.6
30	1	35.7	64.3	28.6

(3) choice of grade level to teach at preschool through third grade;

(4) below the median scores on achievement;

(5) above the median scores on abasement;

(6) married;

(7) above the median scores on the MTAI;

(8) above the median scores on dominance.

Dyadic Factor Results

Table 20 presents the dyadic factor numbers and levels which discriminated between the high mean gain teachers and the low mean gain teachers in the groups based on the pupil Communication gain from CL1 to CL2. The left side of Table 20 lists the factors and levels which favor the high mean gain teacher group, whereas the right side of Table 20 lists the factors and levels which favor the low mean gain teacher group.

The first two factors listed in combination in Table 20 are 16 and 38. The levels for these factors are 2 and 2. The first 2 refers to level 2 under factor 16, and the second 2 refers to level 2 under factor 38. The reader is referred to Table 9 which shows that factor 16, level 2 refers to below the median in total years teaching experience; factor 38 level 2 refers to below the median in age. The column headed by % Difference for High Mean Teachers refers to the difference between the percentage of high mean teachers and the percentage of low mean teachers who showed the two factors at the two levels in question. Therefore, when the high mean group and low mean group were examined with regard to factor 16, level 2 and factor 38, level 2 it was found that after subtracting the percentage of low mean gain teachers from the percentage of high mean gain teachers a difference of 43.8 percent remained in favor of the high mean gain teachers.

TABLE 20
COMMUNICATION
CAIN LEVINE1-2
DYADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS

Factor	Level	% Difference for High $\bar{X}$ Teachers
16, 38	2, 2	43.8
16, 19	2, 2	37.5
16, 36	2, 2	37.5
19, 26	2, 1	37.5
19, 36	2, 2	37.5
19, 38	2, 2	37.5
20, 38	1, 2	37.5
25, 26	1, 1	37.5
28, 38	1, 2	37.5
13, 28	1, 1	31.3
19, 23	2, 1	31.3
19, 25	2, 1	31.3
22, 38	2, 2	31.3
23, 24	1, 2	31.3
36, 38	2, 2	31.3
4, 23	3, 2	25.0
7, 19	2, 2	25.0
18, 20	1, 1	25.0
19, 20	2, 1	25.0
25, 28	1, 1	25.0

LOW MEAN GAIN TEACHER FACTORS

Factor	Level	% Difference for Low $\bar{X}$ Teachers
22, 38	2, 1	37.5
2, 38	2, 1	31.3
4, 38	2, 1	31.3
16, 19	1, 1	31.3
16, 38	1, 1	31.3
17, 23	1, 2	31.3
19, 38	1, 1	31.3
21, 22	2, 2	31.3
36, 38	1, 1	31.3
16, 36	1, 1	25.0
19, 36	1, 1	25.0
26, 28	2, 2	25.0

The remaining factors and levels on Table 20 can be examined in the above fashion. The factors and levels under the right side of Table 20 refer to those which favored the low mean gain group over the high mean gain group. Likewise, the column headed by % Difference for Low Mean Teachers refers to the percentage which remains after the subtraction of the percentage of high mean gain teachers who showed the factors and levels in question from the percentage of low mean gain teachers. The result always favors the low mean gain teachers.

The Table 20 factors and levels were all suggested as possible discriminators between the teachers whose students show high mean gain on Communication from CL2 to CL3 and the teachers whose students show little or no gain on Communication from CL2 to CL3. However, none of the suggested dyadic factors and levels which discriminated between the groups on Table 20 were found to discriminate between the teacher groups chosen on the basis of pupil Communication gain scores from CL2 to CL3.

Table 21 lists the combinations of dyadic factors which discriminated between the high mean gain teachers and the low mean gain teachers in the groups based on pupil Communication gain from CL1 to CL3.

The left side of Table 21 presents the combination of dyadic factors and levels which favored the high mean gain teachers. The following dyadic factors and levels favored the high mean gain group of teachers:

(1) no children in the family and scores below the median on dominance;

(2) scores below the median on the MTAI and above the median on achievement;

(3) no children in the family and scores above the median on achievement;

(4) no experience teaching EMR children and scores above the median on achievement;

TABLE 21
COMMUNICATION
CAIN LEVINE 1-3
DYADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS				
Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Lo $\overline{X}$ Tchrs.	% Diff.
5,30	1,2	50.0	0	50.0
21,22	2,1	57.1	7.1	50.0
5,22	1,1	42.9	0	42.9
14,22	2,1	64.3	21.4	42.9
22,31	1,2	50.0	7.1	42.9
6,22	1,1	42.9	7.1	35.8
6,30	1,2	42.9	7.1	35.8
21,30	2,2	42.9	7.1	35.8
2,22	1,1	28.6	0	28.6
2,30	1,2	28.6	0	28.6
4,7	3,2	28.6	0	28.6
5,6	1,1	50.0	21.4	28.6
5,21	1,2	42.9	14.3	28.6
6,21	1,2	42.9	14.3	28.6
6,27	1,1	35.7	7.1	28.6
12,21	2,2	28.6	0	28.6
12,22	2,1	28.6	0	28.6
12,35	2,1	28.6	0	28.6

LOW MEAN GAIN TEACHER FACTORS				
Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Lo $\overline{X}$ Tchrs.	% Diff.
3,9	1,1	0	64.3	64.3
2.9	2.1	2.14	78.6	57.2
2,11	2,1	28.6	85.7	57.1
9.31	1,1	7.1	64.3	57.2
11,31	1,1	14.3	71.4	57.1
2,31	2,1	28.6	78.6	50.0
3,11	1,1	14.3	64.3	50.0
9,11	1,1	28.6	78.6	50.0
22,30	2,1	0	50.0	50.0
30,31	1,1	7.1	50.0	42.9
2,3	2,1	28.6	64.3	35.7
2,21	2,1	21.4	57.1	35.7
2,22	2,2	14.3	50.0	35.7
3,24	1,2	0	35.7	35.7
3.31	1,1	14.3	50.0	35.7
9,21	1,1	21.4	57.1	35.7
9,22	1,2	14.3	50.0	35.7
9,30	1,1	21.4	57.1	35.7

TABLE 21
CON'T.
COMMUNICATION
CAIN LEVINE 1-3
DYADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS

Factors	Levels	% Hi $\bar{X}$ Tchrs.	% Lo $\bar{X}$ Tchrs.	% Diff.
14, 21	2, 2	50.0	21.3	28.6
14, 30	2, 2	35.7	7.1	28.6
14, 31	2, 2	35.7	7.1	28.6
21, 31	2, 2	35.7	7.1	28.6

LOW MEAN GAIN TEACHER FACTORS

Factors	Levels	% Hi $\bar{X}$ Tchrs.	% Lo $\bar{X}$ Tchrs.	% Diff.
11, 30	1, 1	21.4	57.1	35.7
21, 31	1, 1	14.3	50.0	35.7
2, 30	2, 1	28.6	57.1	28.5
3, 22	1, 2	7.1	35.7	28.6
11, 21	1, 1	28.6	57.1	28.5
11, 22	1, 2	14.3	42.9	28.6
22, 31	2, 1	14.3	42.9	28.6

(5) scores above the median on achievement and below the median on abasement;

(6) no children living at home and scores above the median on achievement;

(7) no children living at home and scores below the median on dominance;

(8) scores below the median on the MTAI and below the median on dominance;

(9) single, widowed, divorced, or separated and acores above the median on achievement;

(10) single, widowed, divorced, or separated and scores below the median on dominance;

(11) no spouse and college degree is a BA or BS but no MA;

(12) no children in the family and no children living at home;

(13) no children in the family and scores below the median on the MTAI;

(14) no children living at home and scores below the median on MTAI;

(15) no children living at home and scores above the median on affiliation;

(16) preference to teach TMR children and scores below the median on MTAI;

(17) preference to teach TMR children and scores above the median on achievement;

(18) preference to teach TMR children and scores above the median on heterosexuality;

(19) no experience teaching EMR children and scores below the median on the MTAI;

(20) no experience teaching EMR children and scores below the median on dominance;

(21) no experience teaching EMR children and scores below the median on abasement;

(22) scores below the median on the MTAI and below the median on abasement.

The right side of Table 21 lists the combination of dyadic factors and levels which favored the low mean gain teachers. The following dyadic factors and levels were found to favor the low mean gain groups of teachers:

(1) a professional spouse and a level of student teaching at kindergarten through third grade;

(2) married and a level of student teaching at kindergarten through third grade;

(3) married and choice of grade level to teach at preschool through third grade;

(4) student teaching at kindergarten through third grade and scores above the median on abasement;

(5) choice of grade level to teach at preschool through third grade and scores above the median on abasement;

(6) married and scores above the median on abasement;

(7) a professional spouse and choice of grade level to teach at preschool through third grade;

(8) student teaching at kindergarten through third grade and choice of grade level to teach at preschool through third grade;

(9) scores below the median on achievement and scores above the median on dominance;

(10) scores above the median on dominance and scores above the median on abasement;

(11) married and a professional spouse;

(12) married and scores above the median on the MTAI;

(13) married and scores below the median on achievement;

(14) a professional spouse and scores below the median on order;

(15) a professional spouse and scores above the median on abasement;

(16) level of student teaching at kindergarten through third grade and scores above the median on the MTAI;

(17) level of student teaching at kindergarten through third grade and scores below the median on achievement;

(18) level of student teaching at kindergarten through third grade and scores above the median on dominance;

(19) choice of grade level to teach at preschool through third grade and scores above the median on dominance;

(20) scores above the median on the MTAI and scores above the median abasement;

(21) married and scores above the median on dominance;

(22) a professional spouse and scores below the median on achievement;

(23) choice of grade level to teach at preschool through third grade and scores above the median on the MTAI;

(24) choice of grade level to teach at preschool through third grade and scores below the median on achievement;

(25) scores below the median on achievement and above the median on abasement.

Triadic Factor Results

Table 22 lists the triadic factor numbers and levels which discriminated between the high mean gain teacher and the low mean gain teachers in the groups based on pupil Communication score from CL1 to CL2. The left side of Table 22 lists the factors and levels which favored the high mean gain group of teachers, whereas the right side of Table 22 lists the factors and levels which favored the low mean gain teacher group.

The first combination of triadic factors noted for the high mean gain teachers are the factors 14, 25, and 26. The levels noted for the three factors are 2, 1, and 1. The 2 refers to level 2 under factor 14, the first 1 refers to level 1 under factor 25, and the second 9 refers to level 1 under factor 26. The reader is referred to Table 9 which shows that factor 14, level 2, refers to no experience teaching EMR children; factor 25, level 1, refers to scores above the median on exhibition; factor 26, level 1, refers to scores above the median on autonomy. By consulting Table 8, the reader can interpret Table 22 and thus determine the other combinations of triadic factors and levels which discriminated between the high mean gain group and the low mean group of teachers.

TABLE 22
COMMUNICATION
CAIN LEVINE 1-2
TRIADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS			LOW MEAN GAIN TEACHER FACTORS		
Factors	Levels	% Difference for High $\bar{X}$ Teachers	Factors	Levels	% Differ. fr. Low X Tchrs.
14,25,26	2,1,1	43.8	12,22,38	1,2,1	37.5
7,16,20	2,2,1	37.5	17,23,36	1,2,1	37.5
7,27,38	2,1,2	37.5	22,25,38	2,2,1	37.5
12,19,36	1,2,2	37.5	2,4,16	2,2,1	31.3
12,19,38	1,2,2	37.5	16,21,24	1,2,1	31.3
14,19,26	2,2,1	37.5	17,35,36	1,2,1	31.3
16,19,38	2,2,2	37.5	2,20,31	2,2,2	25.0
19,25,26	2,1,1	37.5	2,22,23	2,2,2	25.0
19,27,34	2,1,2	37.5	19,25,38	1,2,1	25.0
19,36,38	2,2,2	37.5	22,31,38	2,1,1	25.0
7,19,20	2,2,1	31.3			
10,19,23	1,2,1	31.3			
11,19,26	1,2,1	31.3			
16,19,26	2,2,1	31.3			
16,25,38	2,1,2	31.3			
16,36,38	2,2,2	31.3			
19,20,38	2,1,2	31.3			
19,25,26	2,1,1	31.3			
19,25,38	2,1,2	31.3			
19,28,38	2,1,2	31.3			
23,24,38	1,2,2	31.3			
23,29,38	1,2,2	31.3			
25,26,38	1,1,2	31.3			
28,29,38	1,2,2	31.3			
2,37,38	2,1,2	25.0			
3,19,26	3,2,1	25.0			
7,11,12	2,1,1	25.0			
7,25,27	2,1,1	25.0			
10,11,38	1,1,2	25.0			
10,21,37	1,1,2	25.0			
11,19,34	1,2,2	25.0			
16,19,25	2,2,1	25.0			
16,25,26	2,1,1	25.0			
16,25,36	2,1,2	25.0			
16,26,38	2,1,2	25.0			
16,27,30	2,1,2	25.0			

TABLE 22
CON'T.
COMMUNICATION
CAIN LEVINE 1-2
TRIADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS			LOW MEAN GAIN TEACHER FACTORS		
Factors	Levels	% Difference for High $\overline{X}$ Teachers	Factors	Levels	% Differ. fr. Low $\overline{X}$ Tchrs.
16,28,36	2,1,2	25.0			
16,28,38	2,1,2	25.0		NONE	
19,20,36	2,1,2	25.0			
19,25,36	2,1,2	25.0			
19,26,38	2,1,2	25.0			
25,26,28	1,1,1	25.0			
30,36,38	2,2,2	25.0			

The column headed % Difference for High Mean Teachers refers to the difference between the percentage of high mean gain teachers and the percentage of low mean gain teachers showing the three factors at the three levels in question, the difference being in favor of the high mean gain teachers. The column headed % Difference for Low Mean Teachers refers to the difference between the percentage of high mean gain teachers and percentage of low mean gain teachers, with the difference favoring the low mean gain teacher group.

The Table 22 combinations of factors and levels were all suggested as possible discriminators between the teachers whose students showed high mean gain on Communication from CL2 to CL3 and the teachers whose students showed low mean gain on Communication from CL2 to CL3. However, none of the suggested triadic factors and levels which discriminated between the teacher groups on Table 22 were found to discriminate between the teacher groups chosen on the basis of pupil Communication gain scores from CL2 to CL3.

Table 23 lists the triadic factors and levels which discriminated between the high mean gain teachers and the low mean gain teachers in the groups established from pupil Communication gain from CL1 to CL3. The left side of Table 23 lists the combinations of triadic factors and levels which favored the high mean gain teachers. The right side of Table 23 lists the combinations of triadic factors and levels which favored the low mean gain teachers.

Table 23 lists twenty-two triadic factors which discriminated in favor of the high mean gain teachers at over a 25 percent difference between the percentage of high mean gain teachers and the percentage of low mean gain teachers. Only the first two triadic factors which favored the high mean gain group at over a 42 percent difference are listed here. The two best combinations of triadic factors and levels were:

TABLE 23
COMMUNICATION
CAIN LEVINE 1-3
TRIADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS

Factors	Levels	% Hi $\bar{X}$ Tchrs.	% Lo $\bar{X}$ Tchrs.	% Diff.
5, 6, 30	1, 1, 2	42.9	0	42.9
14, 21, 22	2, 2, 1	50.0	7.1	42.9
5, 6, 22	1, 1, 1	35.7	0	35.7
5, 21, 22	1, 2, 1	35.7	0	35.7
5, 21, 30	1, 2, 2	35.7	0	35.7
5, 22, 35	1, 1, 1	35.7	0	35.7
5, 27, 30	1, 1, 2	35.7	0	35.7
5, 30, 35	1, 2, 1	35.7	0	35.7
6, 21, 22	1, 2, 1	35.7	0	35.7
14, 22, 31	2, 1, 2	35.7	0	35.7
2, 19, 29	1, 2, 1	28.6	0	28.6
6, 21, 30	1, 2, 2	28.6	0	28.6
6, 22, 35	1, 1, 1	35.7	7.1	28.6
6, 27, 30	1, 1, 2	28.6	0	28.6
12, 21, 22	2, 2, 1	28.6	0	28.6
12, 21, 35	2, 2, 1	28.6	0	28.6
12, 22, 35	2, 1, 1	28.6	0	28.6
14, 21, 30	2, 2, 2	28.6	0	28.6
14, 22, 35	2, 1, 1	42.9	14.3	28.6

LOW MEAN GAIN TEACHER FACTORS

Factors	Levels	% Hi $\bar{X}$ Tchrs.	% Lo $\bar{X}$ Tchrs.	% Diff.
2, 3, 9	2, 1, 1	0	64.3	64.3
2, 9, 11	2, 1, 1	14.3	78.6	64.3
2, 9, 31	2, 1, 1	0	64.3	64.3
2, 11, 31	2, 1, 1	7.1	71.4	64.3
3, 9, 11	1, 1, 1	0	64.3	64.3
9, 11, 31	1, 1, 1	0	64.3	64.3
2, 3, 11	2, 1, 1	14.3	64.3	50.0
3, 9, 31	1, 1, 1	0	50.0	50.0
2, 9, 21	2, 1, 1	7.1	50.0	42.9
2, 9, 24	2, 1, 2	7.1	50.0	42.9
2, 11, 21	2, 1, 1	14.3	57.1	42.8
2, 11, 24	2, 1, 2	7.1	50.0	42.9
2, 22, 30	2, 2, 1	0	42.9	42.9
2, 30, 31	2, 1, 1	7.1	50.0	42.9
9, 21, 31	1, 1, 1	0	42.9	42.9
9, 22, 30	1, 2, 1	0	42.9	42.9
9, 24, 31	1, 2, 1	0	42.9	42.9
9, 30, 31	1, 1, 1	0	42.9	42.9
11, 21, 31	1, 1, 1	7.1	50.0	42.9

TABLE 23
CON'T.
COMMUNICATION
CAIN LEVINE 1-3
TRIADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS

Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Lo $\overline{X}$ Tchrs.	% Diff.
21, 27, 30	2, 1, 2	28.6	0	28.6
22, 29, 34	1, 1, 2	28.6	0	28.6
22, 31, 35	1, 2, 1	35.7	7.1	28.6

LOW MEAN GAIN TEACHER FACTORS

Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Lo $\overline{X}$ Tchrs.	% Diff.
2, 3, 24	2, 1, 2	0	35.7	35.7
2, 3, 31	2, 1, 1	14.3	50.0	35.7
2, 9, 22	2, 1, 2	7.1	42.9	35.8
2, 9, 30	2, 1, 1	14.3	50.0	35.7
2, 11, 30	2, 1, 1	14.3	50.0	35.7
2, 21, 31	2, 1, 1	14.3	50.0	35.7
2, 22, 31	2, 2, 1	7.1	42.9	35.8
2, 24, 30	2, 2, 1	0	35.7	35.7
2, 24, 31	2, 2, 1	7.1	42.9	35.8
3, 9, 22	1, 1, 2	0	35.7	35.7
3, 9, 24	1, 1, 2	0	35.7	35.7
3, 11, 24	1, 1, 2	0	35.7	35.7
9, 11, 22	1, 1, 2	7.1	42.9	35.8
9, 11, 30	1, 1, 1	14.3	50.0	35.7
11, 22, 30	1, 2, 1	0	35.7	35.7
21, 24, 31	1, 2, 1	0	35.7	35.7
2, 3, 22	2, 1, 2	7.1	35.7	28.6
2, 11, 22	2, 1, 2		42.9	28.6
2, 21, 24	2, 1, 2	7.1	35.7	28.6
3, 11, 22	1, 1, 2	7.1	35.7	28.6
3, 24, 31	1, 2, 1	0	28.6	28.6

TABLE 23
CON'T.
COMMUNICATION
CAIN LEVINE 1-3
TRIADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS

Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Lo $\overline{X}$ Tchrs.	% Diff.

NONE

LOW MEAN GAIN TEACHER FACTORS

Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Lo $\overline{X}$ Tchrs.	% Diff.
9,11,21	1,1,1	21.4	50.0	28.6
9,11,24	1,1,2	21.4	50.0	28.6
9,22,31	1,2,1	7.1	35.7	28.6
9,24,30	1,2,1	7.1	35.7	28.6
11,22,31	1,2,1	7.1	35.7	28.6
24,30,31	2,1,1	0	28.6	28.6

(1) no children in the family, no children living at home, and scores below the median on dominance;

(2) no experience teaching EMR children, scores below the median on the MTAI, and scores above the median on achievement.

Forty-six combinations of triadic factors are found to discriminate in favor of the low mean gain teacher group in Table 23. Only the first nineteen triadic factors which favored the low mean gain group at over a 42% difference between the percentage of high mean gain teachers and low mean gain teachers are presented here. The low mean gain triadic factors were:

(1) married, a professional spouse, and a level of student teaching at kindergarten through third grade;

(2) married, a level of student teaching at kindergarten through third grade, and a choice of grade level to teach at preschool, through third grade;

(3) married, a level of student teaching at kindergarten through third grade, and scores above the median on abasement;

(4) married, a choice of grade level to teach at preschool through third grade, and scores above the median on abasement;

(5) a professional spouse, a level of student teaching at kindergarten through third grade, and a choice of grade level to teach at preschool through third grade;

(6) a level of student teaching at kindergarten through third grade, a choice of grade level to teach at preschool through third grade, and scores above the median on abasement;

(7) married, a professional spouse, and choice of grade level to teach at preschool through third grade;

(8) a professional spouse, a level of student teaching at kindergarten through third grade, and scores above the median on abasement;

(9) married, a level of student teaching at kindergarten through third grade, and scores above the median on the MTAI;

(10) married, a level of student teaching at kindergarten through third grade, and scores below the median on order;

(11) married, a choice of grade level to teach at preschool through third grade, and scores above the median on the MTAI;

(12) married, a choice of grade level to teach at preschool through third grade, and scores below the median on order;

(13) married, scores below the median on achievement, and above the median on dominance;

(14) married, scores above the median on dominance, and scores above the median on abasement;

(15) a level of student teaching at kindergarten through third grade, scores above the median on the MTAI, and scores above the median on abasement;

(16) a level of student teaching at kindergarten through third grade, scores below the median on achievement, and scores above the median on dominance;

(17) a level of student teaching at kindergarten through third grade, scores below the median on order, and scores above the median on abasement;

(18) a level of student teaching at kindergarten through third grade, scores above the median on dominance, and scores above the median on abasement;

(19) a choice of grade level to teach at preschool through third grade, scores above the median on the MTAI, and scores above the median on abasement.

COMMUNICATION SCORE SUMMARY

This section has described the process whereby groups of teachers were established on the basis of mean pupil Communication gain on the Cain Levine Social Competency Scale (CL). Two groups of teachers, a high mean Communication gain group and a low mean Communication gain group were established for each of three Cain Levine comparisons: CL1 to CL2, CL2 to CL3, and CL1 to CL3 (i.e. first year gain, second year gain, and total gain.)

Teacher information concerning attitudes, personality, and biographical data was coded by the investigators and examined by the IBM 360:67computer to determine if there were differences between the teachers whose students showed high gain on the Communication subscale of the CL compared to the teachers whose students showed little or no gain on the Communication subscale of the CL.

Single factors, and combinations of dyadic and triadic factors were all examined. Whenever a difference of twenty-five percent or more occurred between the high and low gain teacher groups established from class scores on CL1 to CL2, CL2 to CL3, or CL1 to CL3, the factor or combination of factors which showed the difference was hypothesized as a discriminator between the teacher groups.

Results were presented which listed the single, dyadic, and triadic factors which discriminated between the teacher groups selected on the basis of class Communication gain from CL1 to CL2, from CL2 to CL3, and from CL1 to CL3.

Single factors were found which discriminated between the groups of teachers on the attitude score on the MTAI, and the personality characteristics of achievement, dominance, and abasement, and biographical information concerning marital status, spouse's occupation, number of children in the family or at home, level of student teaching, choice of grade level to teach, choice of type of child to teach, and experience teaching EMR children.

Dyadic factors were found which discriminated between the groups of teachers on the attitude score on the MTAI in combination which each of the personality variables achievement, dominance, and abasement. Dyadic factors were also found which discriminated between the teacher groups on the attitude score on the MTAI and each of the following variables concerning biographical data: number of children in the family and at home, choice of type of child to teach, experience teaching EMR children, marital status, level of student teaching, and choice of grade level to teach.

Dyadic factors were found which discriminated between the groups of teachers on personality variables. The personality variable of achievement was found to discriminate between the groups in combination with each of the variables dominance and abasement. Dominance and abasement also combine with each other to discriminate between the groups.

Dyadic factors were found which discriminated between the groups of teachers on personality variables in combination with variables on biographical data. The personality characteristics of achievement, dominance and abasement were each found in combination with each of the following variables: marital status, level of student teaching, choice of grade level to teach, and experience teaching EMR children; the variables of achievement, order, and abasement were each found in combination with spouse's occupation; the variables of achievement, affiliation, and abasement were each found in combination with number of children in the family or number of children at home; and the variables of achievement and heterosexuality were each found in combination with choice of child to teach.

Dyadic factors were also found which discriminated between the groups of teachers on biographical information variables. The variable marital status combined with each of the following variables: spouse's occupation, level of student teaching, and choice of grade level to teach; the variable spouse's occupation combined with level of student teaching, choice of grade level to teach, and highest college degree earned; the variable number of children in the family combined with the variable number of children living at home; and the variable level of student teaching combined with choice of grade level to teach.

Sixty-eight triads discriminated between the groups of teachers. Only the results of the best twenty-one triads determined by greater differences between the groups are summarized here. Triads were found which discriminated between the groups of teachers on the attitude score on the MTAI in combination with one personality variable and one biographical information variable. The MTAI score and the score on abasement combined with level of student teaching and with choice of grade level to teach. The MTAI score also combined with achievement and with experience teaching EMR children.

Triadic factors were found which discriminated on the MTAI score in combination with two biographical information variables. The MTAI score and marital status combined with level of student teaching and with choice of grade level to teach.

Triads were found which discriminated between the teachers on two personality factors and one factor concerning biographical data. The personality variables of achievement and dominance combined with marital status as well as level of student teaching; the personality variables of dominance and abasement combined with marital status as well as level of student teaching; and the personality variables of order and abasement combined with level of student teaching.

Triads were found which discriminated between the teachers on one personality factor and two factors concerning biographical

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data. The personality variable of abasement along with level of student teaching combined with marital status as well as spouse's occupational status; abasement along with choice of grade level to teach combined with marital status as well as level of student teaching; order along with marital status combined with level of student teaching as well as choice of grade level to teach; and dominance combined with number of children in the family and number of children at home.

Triads were also found which discriminated between the teachers on three factors concerning biographical data. Marital status and spouse's occupational status combined with level of student teaching and with choice of grade level to teach; and level of student teaching and choice of grade level combined with marital status as well as spouse's occupational status.

RESULTS: SOCIAL SKILLS SCORE COMPARISONS

The sample of teachers selected on the basis of pupil gain on Social Skills from CL1 to CL2 was composed of thirty-nine teachers of TMR children. Only those teachers who had administered CLs to the same children in the fall of 1965 and the fall of 1966 were included in the sample. A class mean percentage gain score was computed on pupil gain in Social Skills for each of the thirty-nine teachers. The class means were then ranked from the highest mean gain class to the lowest mean gain class. Since the group differences program required an equal number in each group for the comparison process, sixteen teachers were selected from each extreme of the class mean distribution. Therefore, thirty-two teachers were included in the group differences sample: sixteen high mean percentage gain class teachers and sixteen low mean percentage gain class teachers. The seven teachers whose class means clustered around the median of the distribution were eliminated to maintain greater difference between the two teacher groups.

The sample of teachers selected on the basis of pupil gain on Social Skills from CL2 to CL3 was composed of fifty-nine teachers of TMR children. Only those teachers who had administered CLs to the same children in the fall of 1966 and the spring of 1967 were included in the sample. A class mean percentage gain score was computed on pupil gain in Social Skills for each of the fifty-nine teachers. The class means were ranked from the highest to the lowest mean gain class and twenty-four teachers were selected from each extreme of the class mean distribution. Therefore, forty-eight teachers were included in the group differences sample: twenty-four high mean percentage gain class teachers and twenty-four low mean percentage gain class teachers. The eleven teachers whose class means clustered around the median of the distribution were eliminated to maintain greater difference between the two teacher groups.

The sample of teachers selected on the basis of pupil gain on Social Skills from CL1 to CL3 was composed of thirty-three teachers of TMR children. Only those teachers who had administered CLs to the same children in the fall of 1965 and the spring of 1967 were included in the sample. A class mean percentage gain score was computed on pupil gain in Social Skills for each of the thirty-three teachers. The class means were ranked from the highest to the lowest mean gain class and fourteen teachers were selected from each extreme of the class mean distribution. Therefore, twenty-eight teachers were included in the group differences sample: fourteen high mean percentage gain class teachers and fourteen low mean percentage gain class teachers. The five teachers whose class means clustered around the median of the distribution were eliminated to maintain greater difference between the two teacher groups.

The procedure followed in the group differences program for Social Skills is illustrated by Figure 6.

SELECTION OF TEACHER FACTORS RELATING TO PUPIL GROWTH ON
SOCIAL SKILLS FOR THE CAIN LEVINE.

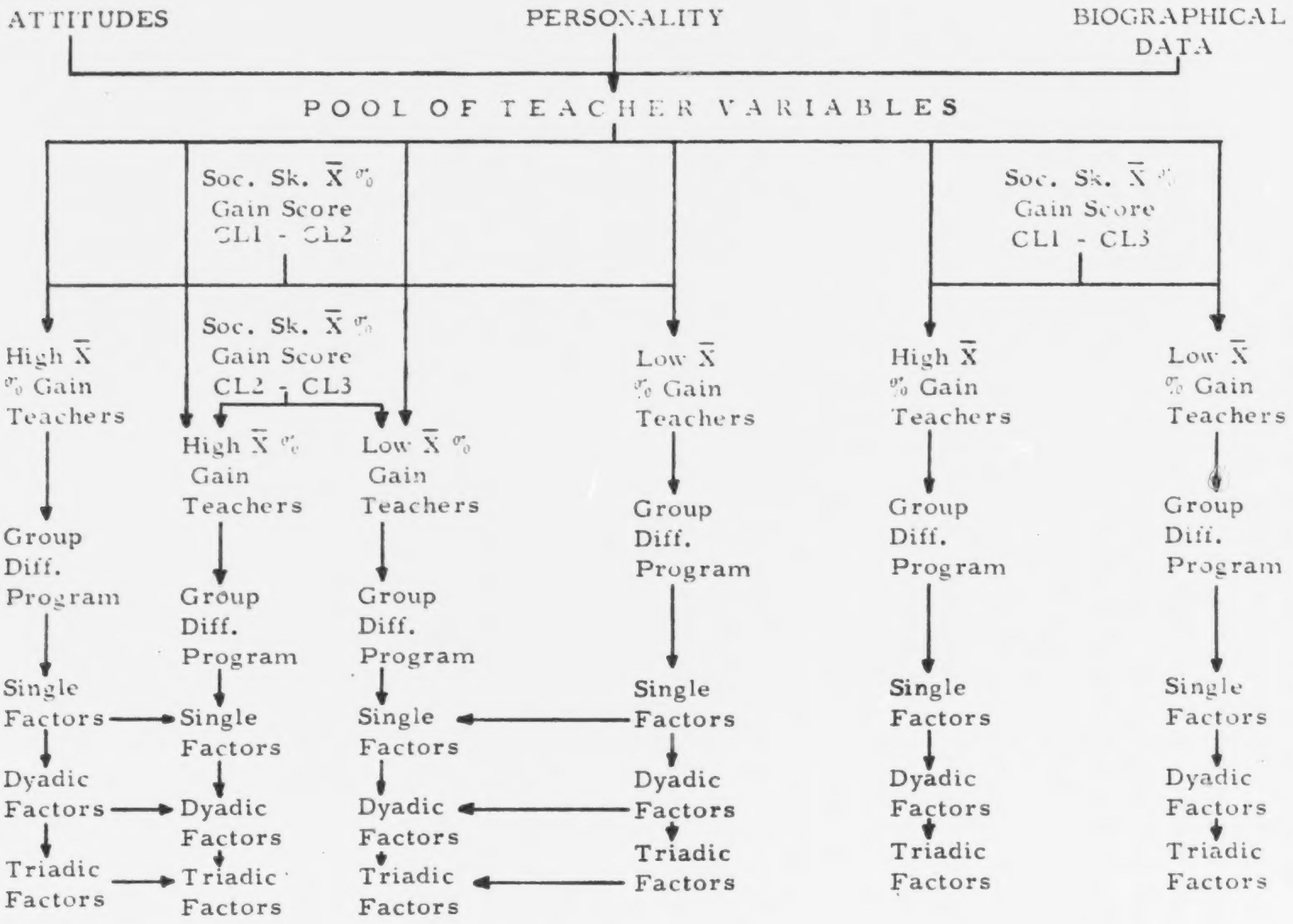
ATTITUDES
PERSONALITY
BIOGRAPHICAL DATA
POOL OF TEACHER VARIABLES
Soc. Sk. $\overline{X}$ % Gain Score CL1 - CL2
Soc. Sk. $\overline{X}$ % Gain Score CL1 - CL3
Soc. Sk. $\overline{X}$ % Gain Score CL2 - CL3
High $\overline{X}$ % Gain Teachers
High $\overline{X}$ % Gain Teachers
Low $\overline{X}$ % Gain Teachers
Low $\overline{X}$ % Gain Teachers
High $\overline{X}$ % Gain Teachers
Low $\overline{X}$ % Gain Teachers
Group Diff. Program
Single Factors
Dyadic Factors
Triadic Factors

Figure 6:

A pool of teacher variables consisted of information on teacher attitudes, personality, and biographical data. The Social Skills mean percentage gain on the CL was computed in all the classes for CL1 to CL2, CL2 to CL3, and CL1 to CL3. Two teacher groups were established as described above on the basis of either a high Social Skills mean percentage gain class or a low Social Skills mean percentage gain class from CL1 to CL2; similarly, two teacher groups were also established for each of CL2 to CL3 and CL1 to CL3.

Once the teacher groups were established, the computer search for Group Differences program was used to select from the pool of teacher variables single factors, dyadic factors, and triadic factors which discriminated between the two groups. Whenever single factors, dyadic factors, and triadic factors were found to discriminate between the two teacher groups involved in the CL1 to CL2 administrations, the same factors were examined for the teacher groups involved in the CL2 to CL3 administrations. Only those factors which discriminated between the teacher groups established from both CL1 to CL2 and CL2 to CL3 were hypothesized as showing a close relationship to growth in the Social Skills aspect of social competency.

Since the pupil gain scores on Social Skills from CL1 to CL3 covered a period of one and one-half years, the Social Skills scores from CL1 to CL3 were assumed to be the most stable. Therefore, a separate group differences analysis was made of the teacher groups established on the basis of the Social Skills class mean percentage gain scores from CL1 to CL3. The single, dyadic, and triadic factors which discriminated between the two teacher groups were also hypothesized as having a significant relationship to growth in the Social Skills aspect of social competency.

Single Factor Results

Table 24 lists the single factors which discriminated between the high mean gain teachers and low mean gain teachers in the groups established on the basis of pupil Social Skills gain scores from CL1 to CL2.

TABLE 24
SOCIAL SKILLS
CAIN LEVINE 1-2
SINGLE FACTORS

HIGH MEAN GAIN TEACHER FACTORS			LOW MEAN GAIN TEACHER FACTORS		
Factors	Levels	% Diff. for High Mean Tchrs.	Factors	Levels	% Diff. for Low Mean Tchrs.
35	1	56.3	35	2	56.3
16	2	43.8	5	2	43.8
21	1	43.8	16	1	43.8
31	2	43.8	31	1	43.8
5	3	31.3	21	2	37.5
17	2	31.3	24	1	31.3
24	2	31.3	26	2	31.3
26	1	31.3	36	1	31.3
36	2	31.3	10	2	25
7	2	25	12	2	25
12	1	25	15	3	25
13	2	25	17	1	25
15	1	25	29	1	25

The left side of Table 24 lists the factor numbers and levels which discriminated between the two teacher groups in favor of the group of teachers whose students showed a high mean percentage gain on Social Skills from CL1 to CL2. The first factor is listed as factor 35 and the level represented is level 1. The reader is referred to Table 9 which reveals that factor 35, level 1 signifies scores above the median on heterosexuality. The column headed % Difference for High Mean Teachers refers to the difference between the percentage of high mean gain teachers and the percentage of low mean gain teachers who showed factor 35 at level 1. The figure in the column was computed by subtracting the percentage of teachers in the low mean gain group who showed the factor and level in question from the percentage of teachers in the high mean gain group who showed the factor and level in question. The factors which showed the greatest difference were the most discriminating factors between the two teacher groups.

The right side of Table 24 lists the factors and levels which discriminated between the two teacher groups in favor of the group of teachers whose students showed a low mean gain on Social Skills from CL1 to CL2. The right side of Table 24 was constructed in a similar manner to the left side of Table 24. However, the percentage difference between the high mean gain group of teachers and the low mean gain group of teachers always favors the low mean gain group of teachers.

The Table 24 factors and levels were all suggested as possible discriminators between the teachers whose students showed high mean gain on Social Skills from CL2 to CL3 and the teachers whose students showed low mean gain on Social Skills from CL2 to CL3.

Table 25 lists the single factor numbers and levels which discriminated between the high mean gain teachers and the low mean gain teachers over both CL1 to CL2 and CL2 to CL3.

Table 25 lists factor 35, level 1 as the only factor and level which favored the high mean gain teacher groups. Table 9 reveals that factor 35, level 1, refers to scores above the median on heterosexuality. In addition the percentages for the high mean gain teachers and the low mean gain teachers with the difference between the percentages for the groups from CL1 to CL2 and CL2 to CL3 are listed in Table 25.

Table 25 also lists factor 35, level 2, as the only factor and level which favored the low mean gain teacher groups. Table 9 reveals that factor 35, level 2 refers to scores below the median on heterosexuality. The percentages of the teachers in each group who showed factor 35 at level 2 as well as the difference between the percentages are also listed.

Table 26 lists the single factor numbers and levels which discriminated between the high mean gain teachers and the low mean gain teachers in the groups based on pupil Social Skills gain from CL1 to CL3.

The upper portion of Table 26 lists the single factors and levels which discriminated between the two teacher groups in favor of the high mean gain teachers. The following factors and levels favored the high mean gain teachers:

TABLE 25
SOCIAL SKILLS
CAIN LEVINE 1-2, 2-3
SINGLE FACTORS

		TEACHER CL1 TO CL2			TEACHER CL2 TO CL3		
Factor	Level	% High $\overline{X}$ Teachers	% Low $\overline{X}$ Teachers	Percent Difference	% High $\overline{X}$ Teachers	% Low $\overline{X}$ Teachers	Percent Difference
(A) HIGH MEAN GAIN TEACHER FACTORS							
35	1	75.0	18.7	56.3	66.7	20.8	45.8
(B) LOW MEAN GAIN TEACHER FACTORS							
35	2	25.0	81.3	56.3	33.3	79.2	45.8

TABLE 26
SOCIAL SKILLS
CAIN LEVINE 1-3
SINGLE FACTORS

(A) HIGH MEAN GAIN TEACHER FACTORS

Factors	Levels	% High Mean Teachers	% Low Mean Teachers	Percent Difference
35	1	92.9	21.4	71.4
5	3	42.9	14.3	28.6
13	2	64.3	35.7	28.6
15	3	64.3	35.7	28.6
37	1	64.3	35.7	28.6

(B) LOW MEAN GAIN TEACHER FACTORS

Factors	Levels	% High Mean Teachers	% Low Mean Teachers	Percent Difference
35	2	7.1	78.6	71.4
13	1	21.4	64.3	42.9
6	2	21.4	57.1	35.7
5	2	21.4	50.0	28.6
10	2	14.3	42.9	28.6
37	2	35.7	64.3	28.6

(1) scores above the median on heterosexuality;

(2) three or more children in the family;

(3) two or three years teaching TMR children;

(4) three or more years teaching normal children;

(5) scores above the median on the SAQ.

The lower portion of Table 26 lists the factors and levels which discriminated between the two teacher groups in favor of the low mean gain teachers. The following factors and levels favored the low mean gain teachers:

(1) scores below the median on heterosexuality;

(2) only one year of experience teaching TMR children;

(3) one or two children living at home;

(4) one or two children in the family;

(5) choice of occupation a regular education teacher;

(6) scores below the median on the SAQ.

Dyadic Factor Results

Table 27 presents the dyadic factor numbers and levels which discriminated between the high mean gain teachers and the low mean gain teachers in the groups based on pupil Social Skills gain from CL1 to CL2. The left side of Table 27 lists the factors and levels which favored the high mean gain teacher group, whereas the right side of Table 27 lists the factors and levels which favored the low mean gain teacher group.

TABLE 27
SOCIAL SKILLS
CAIN LEVINE 1-2
DYADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS			LOW MEAN GAIN TEACHER FACTORS		
Factors	Levels	% Diff. for High $\overline{X}$ Tchrs.	Factors	Levels	% Diff. fr. Low $\overline{X}$ Tchrs.
12,35	1,1	56.3	35,36	2,1	62.5
21,35	1,1	56.3	16,24	1,1	56.3
16,35	2,1	50.0	31,34	1,1	56.3
16,36	2,2	50.0	16,21	1,2	50.0
17,31	2,2	50.0	16,35	1,2	50.0
17,35	2,1	50.0	21,24	2,1	50.0
19,35	2,1	50.0	26,35	2,2	50.0
21,31	1,2	50.0	31,36	1,1	50.0
22,35	2,1	50.0	31,35	1,2	50.0
24,35	2,1	50.0	31,36	1,1	50.0
31,35	2,1	50.0	5,16	2,1	43.8
7,35	2,1	43.8	5,26	2,2	43.8
16,29	2,2	43.8	5,29	2,1	43.8
16,31	2,2	43.8	16,26	1,2	43.8
17,21	2,1	43.8	16,31	1,1	43.8
17,26	2,1	43.8	21,35	2,2	43.8
29,35	2,2	43.8	26,31	1,1	43.8
17,29	2,2	37.5	30,35	2,2	43.8
19,21	2,1	37.5	5,35	2,2	37.5
21,26	1,1	37.5	13,16	1,1	37.5
21,29	1,2	37.5	16,17	1,1	37.5
21,36	1,2	37.5	17,36	1,1	37.5
24,29	2,2	37.5	21,36	2,1	37.5
24,31	2,2	37.5	24,26	1,1	37.5
26,35	1,1	37.5	24,31	1,1	37.5
16,17	2,2	31.3	24,35	1,2	37.5
16,21	2,1	31.3	29,31	1,1	37.5
16,26	2,1	31.3	29,35	1,2	37.5
17,24	2,2	31.3	5,21	2,2	31.3
22,34	2,2	31.3	5,31	2,1	31.3
24,36	2,2	31.3	5,36	2,1	31.3
26.31	1,2	31.3	17,21	1,2	31.3
26,36	1,2	31.3	17,35	1,2	31.3
29,31	2,2	31.3	21,26	2,2	31.3

TABLE 27
CON'T.
SOCIAL SKILLS
CAIN LEVINE 1-2
DYADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS

Factors	Levels	% Diff. for High $\bar{X}$ Tchrs.
29, 36	2, 2	31.3
5, 26	3, 1	25.0
5, 36	3, 2	25.0
21, 24	1, 2	25.0
24, 26	2, 1	25.0
26, 29	1, 2	25.0
31, 36	2, 2	25.0
35, 36	1, 2	25.0

LOW MEAN GAIN TEACHER FACTORS

Factors	Levels	% Diff. for Low $\bar{X}$ Tchrs.
21, 30	2, 2	31.3
21, 31	2, 1	31.3
24, 36	1, 1	31.3
26, 29	2, 1	31.3
26, 36	2, 1	31.3
5, 17	2, 1	25.0
5, 24	2, 1	25.0
16, 29	1, 1	25.0
16, 36	1, 1	25.0
17, 24	1, 1	25.0
21, 29	2, 1	25.0
29, 36	1, 1	25.0

The first two factors listed in combination on Table 27 are 12 and 35. The levels for these factors are 1 and 1. The first 1 refers to level 1 under factor 12 and the second 1 refers to level 1 under factor 35. When Table 9 is consulted, the reader finds that factor 12 at level 1 refers to a preference to teach TMR children; factor 35 at level 1 refers to scores above the median on heterosexuality. The column headed % Difference for High Mean Teachers refers to the difference between the percentage of high mean teachers and the percentage of low mean teachers who showed the two factors at the two levels in question. Therefore, when the high mean group and the low mean group were examined with regard to factor 12 at level 1 and factor 35 at level 1, it was found that after subtracting the percentage of low mean gain teachers from the percentage of high mean gain teachers, a difference of 56.3 percent remained in favor of the high mean gain teachers.

The remaining factors and levels on Table 27 can be examined in the above fashion. The factors and levels under the right side of Table 27 refer to those which favored the low mean gain group over the high mean gain group. Likewise, the column headed by % Difference for Low Mean Teachers refers to the percentage which remains after the subtraction of high mean gain teachers who showed the factors and levels in question from the percentage of low mean gain teachers. The result always favors the low mean gain teachers.

Table 27 factors and levels were all suggested as possible discriminators between the teachers whose students showed high mean gain on Social Skills from CL2 to CL3 and the teachers whose students showed low mean gain on Social Skills from CL2 to CL3. Table 28 lists the dyadic factors and levels which discriminated between the high mean gain teachers and the low mean gain teachers over both CL1 to CL2 and CL2 to CL3.

The upper portion of Table 28 lists the dyadic factors and levels which favored the high mean gain teacher groups. The lower portion of Table 28 lists the dyadic factors and levels which favored the low mean gain teacher groups. On the left side of Table 28 are the percentages of teachers in each group who showed the combination of factors and levels in question. The teacher groups were based on pupil Social Skills gain from CL1 to CL2. The difference between the two percentages is also listed. On the right side of Table 28 are the percentage of teachers in the high mean gain group and the percentage of teachers in the low mean gain group who showed the combination of factors and levels in question. The teacher groups were based on pupil Social Skills gain from CL2 to CL 3. The difference between the two percentages is also noted.

Table 28 lists eight combinations of dyadic factors and levels which discriminated between the high mean gain teachers and the low mean gain teachers in favor of the high mean gain teachers. The following combinations of dyadic factors were found to favor the high mean gain teachers:

(1) number of total years teaching experience below the median and scores above the median on heterosexuality;

(2) scores above the median on the MTAI and above the median on heterosexuality;

(3) scores below the median on abasement and above the median on heterosexuality;

(4) choice of TMR as type of child to teach and scores above the median on heterosexuality;

(5) highest degree earned a BA or BS degree and scores below the median on heterosexuality;

(6) scores below the median on order and above the median on heterosexuality;

(7) other activities and interests without children and scores above the median on heterosexuality;

TABLE 28
SOCIAL SKILLS
CAIN LEVINE 1-2, 2-3
DYADIC FACTORS

(A) HIGH MEAN GAIN TEACHER FACTORS

TEACHER CL1 TO CL2					TEACHER CL2 TO CL3		
Factor	Level	% High $\overline{X}$ Teachers	% Low $\overline{X}$ Teachers	Percent Difference	% High $\overline{X}$ Teachers	% Low $\overline{X}$ Teachers	Percent Difference
16,35	2,1	50.0	0	50.0	45.8	4.2	41.6
21,35	1,1	56.3	0	56.3	41.7	8.3	33.4
31,35	2,1	62.5	12.5	50.0	45.8	8.3	37.5
12,35	1,1	68.8	12.5	56.3	45.8	16.7	29.1
7,35	2,1	50.0	6.3	43.8	45.8	8.3	37.5
24,35	2,1	56.3	6.3	50.0	45.8	20.8	25.0
19,35	2,1	62.5	12.5	50.0	45.8	20.8	25.0
35,36	1,2	37.5	12.5	25.0	37.5	12.5	25.0

(B) LOW MEAN GAIN TEACHER FACTORS

Factor	Level	% High $\overline{X}$ Teachers	% Low $\overline{X}$ Teachers	Percent Difference	% High $\overline{X}$ Teachers	% Low $\overline{X}$ Teachers	Percent Difference
35,36	2,1	0	62.5	62.5	12.5	37.5	25.0
30,35	2,2	12.5	56.3	43.8	16.7	50.0	33.3
31,35	1,2	18.8	68.8	50.0	12.5	37.5	25.0
21,35	2,2	6.3	50.0	43.8	20.8	45.8	25.0
24,35	1,2	18.8	56.3	37.5	20.8	50.0	29.2
17,35	1,2	18.8	50.0	31.3	12.5	45.8	33.3
21,26	2,2	6.3	37.5	31.3	12.5	41.7	29.2
17,24	1,1	12.5	37.5	25.0	37.5	12.5	25.0

(8) scores above the median on heterosexuality and below the median on aggression.

Table 28 also lists eight combinations of dyadic factors and levels which discriminated between the two groups of teachers in favor of the low mean gain teachers. The following dyads were found to favor the low mean gain teachers:

(1) scores below the median on heterosexuality and above the median on aggression;

(2) scores below the median on dominance and below the median on heterosexuality;

(3) scores above the median on abasement and below the median on heterosexuality;

(4) scores below the median on the MTAI and scores below the median on heterosexuality;

(5) scores above the median on order and below the median on heterosexuality;

(6) teachers' preparation outside class less than 10 hours per week and scores below the median on heterosexuality;

(7) scores below the median on the MTAI and below the median on the EPPS characteristic of autonomy;

(8) teachers' preparation outside class less than 10 hours per week and scores above the median on order.

Table 29 lists the dyadic factors which discriminated between the high mean gain teachers and the low mean gain teachers in the groups based on pupil Social Skills gain from CL1 to CL3.

TABLE 29
SOCIAL SKILLS
CAIN LEVINE 1-3
DYADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS

Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Lo $\overline{X}$ Tchrs.	% Diff.
2, 35	2, 1	78.6	7.1	71.5
20, 35	1, 1	64.3	0	64.3
35, 27	1, 1	64.3	0	64.3
13, 35	2, 1	57.1	7.1	50.0
28, 35	1, 1	50.0	0	50.0
15, 35	3, 1	57.1	14.3	42.8
5, 15	3, 3	35.7	0	35.7
5, 35	3, 1	35.7	0	35.7
13, 15	2, 3	42.9	7.1	35.8
15, 37	3, 1	42.9	7.1	35.8
35, 36	1, 1	50.0	14.3	35.7
5, 13	3, 2	35.7	7.1	28.6
13, 37	2, 1	35.7	7.1	28.6
15, 27	3, 1	50.0	21.4	28.6

LOW MEAN GAIN TEACHER FACTORS

Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Lo $\overline{X}$ Tchrs.	% Diff.
6, 13	2, 1	0	57.1	57.1
29, 35	1, 2	0	57.1	57.1
5, 13	2, 1	0	50.0	50.0
6, 35	2, 2	0	50.0	50.0
13, 35	1, 2	0	50.0	50.0
34, 35	1, 2	0	50.0	50.0
5, 6	2, 2	7.1	50.0	42.9
5, 35	2, 2	0	42.9	42.9
6, 32	2, 1	0	42.9	42.9
29, 38	1, 2	7.1	50.0	42.9
10, 35	2, 2	0	35.7	35.7
13, 37	1, 2	0	35.7	35.7
35, 37	2, 2	7.1	42.9	35.8
10, 37	2, 2	0	28.6	28.6
26, 29	2, 1	21.4	50.0	28.6
32, 35	2, 2	0	28.6	28.6

The left side of Table 29 presents the combination of dyadic factors and levels which favored the high mean gain teachers. The following dyads favored the high mean gain group of teachers:

(1) married and scores above the median on heterosexuality;

(2) no relationship to MRs other than teaching and scores above the median on heterosexuality;

(3) scores above the median on heterosexuality and above the median on the SAQ;

(4) two or three years teaching TMR children and scores above the median on heterosexuality;

(5) scores above the median on intraception and above the median on heterosexuality;

(6) three or more years teaching normal children and scores above the median on heterosexuality;

(7) three or more children in the family and three or more years teaching normal children;

(8) three or more children in the family and scores above the median on heterosexuality;

(9) two or three years teaching TMR children and three or more years teaching normal children;

(10) three or more years teaching normal children and scores above the median on the SAQ;

(11) scores above the median on heterosexuality and above the median on aggression;

(12) three or more children in the family and two or three years teaching TMR children;

(13) two or three years teaching TMR children and scores above the median on the SAQ;

(14) three or more years teaching normal children and scores above the median on affiliation.

The right side of Table 29 presents the combination of dyadic factors and levels which favored the low mean gain teachers. The following dyadic factors and levels favored the low mean gain teachers:

(1) one or two children living at home and one year of teaching experience with TMR children;

(2) scores above the median on succorance and below the median on heterosexuality;

(3) one or two children in the family and one year of teaching experience with TMR children;

(4) one or two children living at home and scores below the median on heterosexualtiy;

(5) one year teaching experience with TMR children and scores below the median on heterosexuality;

(6) scores above the median on endurance and scores below the median on heterosexuality;

(7) one or two children in the family and one or two children living at home;

(8) one or two children in the family and scores below the median on heterosexuality;

(9) one or two children living at home and scores above the median on nurturance;

(10) scores above the median on succorance and below the median on age;

(11) choice of occupation a regular education teacher and scores below the median on heterosexuality;

(12) one year of teaching experience with TMR children and scores below the median on the SAQ;

(13) scores below the median on heterosexuality and below the median on the SAQ;

(14) choice of occupation a regular education teacher and scores below the median on the SAQ;

(15) scores below the median on autonomy and above the median on succorance;

(16) scores below the median on nurturance and below the median on heterosexuality.

Triadic Factor Results

Table 30 lists the triadic factors and levels which discriminated between the high mean gain teachers and the low mean gain teachers in the groups based on pupil Social Skills score from CL1 to CL2. The left side of Table 30 lists the factors and levels which favored the high mean gain group of teachers, whereas the right side of Table 30 lists the factors and levels which favored the low mean gain teacher group.

The first triad noted for the high mean gain teachers is composed of the factors 21, 31, and 35. The levels noted for the three factors are 1, 2 and 1. The first 1 refers to level 1 under factor 21, the 2 refers to level 2 under factor 31, and the second 1 refers to level 1 under factor 35. When Table 9 is consulted, the reader finds that factor 31, level 1 refers to scores above the median on the MTAI, factor 31, level 2 refers to scores below the median on abasement, and factor 35, level 1 refers to scores above the median on heterosexuality. By consulting Table 9, the reader can determine the other triads which are listed in Table 30.

TABLE 30
SOCIAL SKILLS
CAIN LEVINE 1-2
TRIADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS

Factors	Levels	% Diff. for High $\overline{X}$ Tchrs.
21, 31, 35	1, 2, 1	56.3
12, 22, 35	1, 2, 1	50.0
17, 31, 35	2, 2, 1	50.0
19, 21, 31	2, 1, 2	50.0
11, 24, 35	1, 2, 1	43.8
12, 17, 35	1, 2, 1	43.8
12, 18, 35	1, 1, 1	43.8
16, 29, 35	2, 2, 1	43.8
17, 21, 31	2, 1, 2	43.8
17, 21, 35	2, 1, 1	43.8
17, 26, 31	2, 1, 2	43.8
17, 26, 35	2, 1, 1	43.8
17, 29, 35	2, 2, 1	43.8
22, 31, 35	2, 2, 1	43.8
24, 29, 35	2, 2, 1	43.8
24, 31, 35	2, 2, 1	43.8
2, 17, 30	2, 2, 1	37.5
7, 25, 31	2, 1, 2	37.5
12, 22, 34	1, 2, 2	37.5
16, 17, 31	2, 2, 2	37.5
16, 17, 35	2, 2, 1	37.5
16, 21, 31	2, 1, 2	37.5
16, 21, 36	2, 1, 2	37.5
16, 31, 35	2, 2, 1	37.5
17, 21, 26	2, 1, 1	37.5
17, 22, 31	2, 2, 2	37.5
17, 26, 29	2, 1, 2	37.5
17, 29, 31	2, 2, 2	37.5
19, 22, 35	2, 2, 1	37.5
21, 22, 31	1, 2, 2	37.5
21, 22, 35	1, 2, 1	37.5
21, 24, 35	1, 2, 1	37.5
21, 26, 31	1, 1, 2	37.5
21, 26, 35	1, 1, 1	37.5

LOW MEAN GAIN TEACHER FACTORS

Factors	Levels	% Diff. for Low $\overline{X}$ Tchrs.
31, 34, 35	1, 1, 2	56.3
31, 35, 35	1, 2, 1	56.3
16, 21, 24	1, 2, 1	50.0
26, 30, 35	2, 2, 2	50.0
21, 34, 36	1, 1, 1	50.0
34, 35, 36	1, 1, 2	50.0
16, 20, 25	1, 1, 2	43.8
16, 24, 35	1, 1, 2	43.8
16, 26, 35	1, 2, 2	43.8
21, 31, 35	2, 1, 2	43.8
24, 26, 31	1, 2, 1	43.8
24, 26, 35	1, 2, 2	43.8
26, 31, 35	2, 1, 2	43.8
2, 35, 38	2, 2, 2	37.5
13, 15, 22	1, 3, 1	37.5
15, 20, 21	3, 1, 2	37.5
15, 24, 35	3, 1, 2	37.5
16, 21, 31	1, 2, 1	37.5
16, 21, 35	1, 2, 2	37.5
16, 21, 36	1, 2, 1	37.5
16, 24, 26	1, 1, 2	37.5
16, 24, 31	1, 1, 1	37.5
16, 24, 36	1, 1, 1	37.5
16, 26, 30	1, 2, 2	37.5
16, 26, 31	1, 2, 1	37.5
16, 30, 35	1, 2, 2	37.5
16, 31, 35	1, 1, 2	37.5
16, 35, 36	1, 2, 1	37.5
21, 24, 26	2, 1, 2	37.5
21, 24, 31	2, 1, 1	37.5
21, 24, 35	2, 1, 2	37.5
21, 24, 36	2, 1, 1	37.5
21, 26, 35	2, 2, 2	37.5
21, 31, 34	2, 1, 1	37.5

TABLE 30
CON'T.
SOCIAL SKILLS
GAIN LEVINE 1-2
TRIADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS

Factors	Levels	% Diff. for High $\overline{X}$ Tchrs.
21, 29, 31	1, 2, 2	37.5
21, 29, 35	1, 2, 1	37.5
22, 24, 35	2, 2, 1	37.5
22, 26, 35	2, 1, 1	37.5
22, 29, 35	2, 2, 1	37.5
24, 26, 35	2, 1, 1	37.5
2, 17, 31	2, 2, 2	31.3
11, 27, 37	1, 1, 1	31.3
16, 17, 29	2, 2, 2	31.3
16, 21, 35	2, 1, 1	31.3
16, 22, 35	2, 2, 1	31.3
16, 24, 35	2, 2, 1	31.3
16, 24, 36	2, 2, 2	31.3
16, 26, 29	2, 1, 2	31.3
16, 26, 35	2, 1, 1	31.3
16, 26, 36	2, 1, 2	31.3
16, 27, 29	2, 1, 2	31.3
16, 29, 31	2, 2, 2	31.3
16, 29, 36	2, 2, 2	31.3
16, 29, 37	2, 2, 1	31.3
16, 31, 36	2, 2, 2	31.3
16, 35, 36	2, 1, 2	31.3
17, 21, 29	2, 1, 2	31.3
17, 22, 26	2, 2, 1	31.3
17, 22, 29	2, 2, 2	31.3
17, 23, 25	2, 2, 1	31.3
17, 24, 26	2, 2, 1	31.3
17, 24, 29	2, 2, 2	31.3
17, 24, 31	2, 2, 2	31.3
17, 24, 35	2, 2, 1	31.3
21, 22, 26	1, 2, 1	31.3
21, 22, 36	1, 2, 2	31.3

LOW MEAN GAIN TEACHER FACTORS

Factors	Levels	% Diff. for Low $\overline{X}$ Tchrs.
21, 34, 35	2, 1, 2	37.5
21, 35, 36	2, 2, 1	37.5
24, 26, 30	1, 2, 2	37.5
24, 31, 34	1, 1, 1	37.5
24, 31, 35	1, 1, 2	37.5
24, 31, 36	1, 1, 1	37.5
24, 35, 36	1, 2, 1	37.5
26, 30, 31	2, 2, 1	37.5
26, 35, 36	2, 2, 1	37.5
28, 35, 36	1, 2, 1	37.5
30, 31, 34	2, 1, 1	37.5
30, 34, 35	2, 1, 2	37.5
30, 35, 36	2, 2, 1	37.5
2, 4, 21	2, 2, 2	31.3
2, 5, 21	2, 2, 2	31.3
4, 30, 35	2, 2, 2	31.3
11, 31, 36	1, 1, 1	31.3
16, 19, 26	1, 1, 2	31.3
16, 21, 26	1, 2, 2	31.3
16, 21, 34	1, 2, 1	31.3
16, 24, 30	1, 1, 2	313.
16, 24, 34	1, 1, 1	31.3
16, 30, 33	1, 1, 2	31.3
16, 31, 34	1, 1, 1	31.3
16, 31, 36	1, 1, 1	31.3
16, 34, 35	1, 1, 2	31.3
21, 24, 34	2, 1, 1	31.3
21, 26, 30	2, 2, 2	31.3
21, 26, 31	2, 2, 1	31.3
21, 30, 31	2, 2, 1	31.3
21, 30, 34	2, 2, 1	31.3
21, 31, 36	2, 1, 1	31.3

TABLE 30
CON'T.
SOCIAL SKILLS
CAIN LEVINE 1-2
TRIADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS

Factors	Levels	% Diff. for High $\bar{X}$ Tchrs.
21, 24, 31	1, 2, 1	31.3
21, 26, 29	1, 1, 2	31.3
22, 24, 31	2, 2, 2	31.3
22, 26, 31	2, 1, 2	31.3
22, 26, 36	2, 1, 2	31.3
22, 29, 31	2, 2, 2	31.3
24, 26, 31	2, 1, 2	31.3
24, 29, 31	2, 2, 2	31.3
24, 29, 36	2, 2, 2	31.3
26, 29, 35	1, 2, 1	31.3
26, 31, 35	1, 2, 1	31.3
29, 31, 35	2, 2, 1	31.3
2, 20, 21	1, 2, 1	25.0
2, 21, 26	2, 2, 1	25.0
7, 25, 26	2, 1, 1	25.0
16, 17, 21	2, 2, 1	25.0
16, 17, 26	2, 2, 1	25.0
16, 21, 29	2, 1, 2	25.0
16, 22, 26	2, 2, 1	25.0
16, 22, 29	2, 2, 2	25.0
16, 22, 31	2, 2, 2	25.0
16, 22, 36	2, 2, 2	25.0
16, 24, 29	2, 2, 2	25.0
16, 26, 31	2, 1, 2	25.0
16, 27, 36	2, 2, 2	25.0
17, 21, 22	2, 1, 2	25.0
17, 21, 24	2, 1, 2	25.0
17, 22, 24	2, 2, 2	25.0
17, 29, 36	2, 2, 2	25.0
17, 31, 36	2, 2, 2	25.0
17, 35, 36	2, 1, 2	25.0
21, 22, 24	1, 2, 2	25.0
21, 22, 29	1, 2, 2	25.0

LOW MEAN GAIN TEACHER FACTORS

Factors	Levels	% Diff. for Low $\bar{X}$ Tchrs.
21, 34, 36	2, 1, 1	31.3
24, 26, 36	1, 2, 1	31.3
24, 30, 35	1, 2, 2	31.3
24, 34, 35	1, 1, 2	31.3
25, 32, 35	1, 2, 2	31.3
26, 30, 36	2, 2, 1	31.3
26, 31, 34	2, 1, 1	31.3
30, 31, 35	2, 1, 2	31.3
30, 31, 36	2, 1, 1	31.3
30, 34, 36	2, 1, 1	31.3
4, 16, 19	2, 1, 1	25.0
16, 21, 30	1, 2, 2	25.0
16, 26, 36	1, 2, 1	25.0
16, 30, 31	1, 2, 1	25.0
16, 30, 34	1, 2, 1	25.0
16, 30, 36	1, 2, 1	25.0
17, 27, 34	1, 2, 1	25.0
21, 24, 30	2, 1, 2	25.0
21, 26, 34	2, 2, 1	25.0
21, 26, 36	2, 2, 1	25.0
21, 30, 36	2, 2, 1	25.0
21, 32, 35	2, 1, 2	25.0
24, 30, 31	1, 2, 1	25.0
24, 30, 34	1, 2, 1	25.0
24, 34, 36	1, 1, 1	25.0
26, 30, 34	2, 2, 1	25.0
26, 34, 35	2, 1, 2	25.0
27, 31, 38	2, 1, 2	25.0

TABLE 30
CON'T.
SOCIAL SKILLS
CAIN LEVINE 1-2
TRIADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS			LOW MEAN GAIN TEACHER FACTORS		
Factors	Levels	% Diff. for High $\bar{X}$ Tchrs.	Factors	Levels	% Diff. for Low $\bar{X}$ Tchrs.
21,24,36	1,2,2	25.0			
21,26,36	1,1,2	25.0		NONE	
21,29,36	1,2,2	25.0			
21,31,36	1,2,2	25.0			
21,35,36	1,1,2	25.0			
22,24,26	2,2,1	25.0			
22,24,29	2,2,2	25.0			
22,24,36	2,2,2	25.0			
22,29,36	2,2,2	25.0			
22,31,36	2,2,2	25.0			
22,31,38	2,2,1	25.0			
22,35,36	2,1,2	25.0			
24,26,29	2,1,2	25.0			
24,26,36	2,1,2	25.0			
24,31,36	2,2,2	25.0			
24,35,36	2,1,2	25.0			
26,29,31	1,2,2	25.0			
29,35,36	2,1,2	25.0			
31,35,36	2,1,2	25.0			

The column headed % Difference for High Mean Teachers refers to the difference between the percentage of high mean teachers and the percentage of low mean teachers who showed the factors and levels in question with the difference in favor of the high mean gain teachers. The column headed % Difference for Low Mean Teachers refers to the difference in percentages between the two teacher groups with the difference in favor of the low mean gain teachers.

The Table 30 triads were all suggested as possible discriminators between the teachers whose students showed high mean gain on Social Skills from CL2 to CL3 and the teachers whose students showed low mean gain on Social Skills from CL2 to CL3. Table 31 lists the triadic factors and levels which discriminated between the high mean gain teachers and the low mean gain teachers in the groups based on pupil gain over both CL1 to CL2 and CL2 to CL3.

The upper portion of Table 31 lists the triads which favored the high mean gain teacher group. On the left side of Table 31 are the percentages of teachers in each group who showed the factors and levels in question. The teacher groups were based on pupil Social Skills gain from CL1 to CL2. The difference between the two percentages is also noted. On the right side of Table 31 are the percentages of teachers in the groups established from pupil Social Skills gain from CL2 to CL3. The difference between the two percentages is also listed.

The following triadic factors favored the high mean gain groups of teachers:

TABLE 31
SOCIAL SKILLS
CAIN LEVINE 1-2, 2-3
TRIADIC FACTORS

(A) HIGH MEAN GAIN TEACHER FACTORS

		TEACHER CL1 TO CL2			TEACHER CL2 TO CL3		
Factor	Levels	% High $\overline{X}$ Teachers	% Low $\overline{X}$ Teachers	Percent Difference	% High $\overline{X}$ Teachers	% Low $\overline{X}$ Teachers	Percent Difference
21, 31, 35	1, 2, 1	56.3	0	56.3	33.3	8.3	25.0
11, 24, 35	1, 2, 1	43.8	0	43.8	33.3	4.2	29.1
16, 31, 35	2, 2, 1	37.5	0	37.5	33.3	0	33.3
22, 31, 35	2, 2, 1	43.8	0	43.8	25.0	0	25.0
24, 31, 35	2, 2, 1	43.8	0	43.8	33.3	8.3	25.0
16, 21, 35	2, 1, 1	31.3	0	31.3	33.3	33.8	33.8
21, 24, 35	1, 2, 1	37.5	0	37.5	33.3	8.3	25.0
16, 24, 35	2, 2, 1	31.3	0	31.3	33.3	4.2	29.2
31, 35, 36	2, 1, 2	31.3	6.3	25.0	29.2	4.2	25.0

(B) LOW MEAN GAIN TEACHER FACTORS

		TEACHER CL1 TO CL2			TEACHER CL2 TO CL3		
21, 24, 35	2, 1, 2	6.3	43.8	37.5	12.5	41.7	29.2
16, 21, 26	1, 2, 2	0	31.3	31.3	4.2	29.2	25.0
25, 32, 35	1, 2, 2	0	31.3	31.3	4.2	29.2	25.0

(1) scores above the median on the MTAI, below the median on abasement, and above the median on heterosexuality;

(2) choice of grade level to teach at preschool through third grade, scores below the median on order, and above the median on heterosexuality;

(3) number of years teaching experience below the median, scores below the median on abasement, and above the median on heterosexuality;

(4) scores below the median on achievement, below the median on abasement, and above the median on heterosexuality;

(5) scores below the median on order, below the median on abasement, and above the median on heterosexuality;

(6) number of years teaching experience below the median, scores above the median on the MTAI, and above the median on heterosexuality;

(7) scores above the median on the MTAI, below the median on order, and above the median on heterosexuality;

(8) number of years teaching experience below the median, scores below the median on order, and above the median on heterosexuality;

(9) scores below the median on abasement, above the median on heterosexuality, and below the median on aggression.

The following triads were found to discriminate between the groups of teachers in favor of the low mean gain group:

(1) scores below the median on the MTAI, above the median on order, and below the median on heterosexuality;

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(2) number of years teaching experience above the median, scores below the median on the MTAI, and below the median on autonomy;

(3) scores above the median on exhibition, below the median on nurturance, and below the median on heterosexuality.

Table 32 lists the triads which discriminated between the high mean gain teachers and the low mean gain teachers in the groups determined by pupil Social Skills gain from CL1 to CL3. The left side of Table 32 lists the triadic factors and levels which favored the high mean gain teachers. The right side of Table 32 lists the triadic factors and levels which favored the low mean gain teachers.

Table 32 lists fifty-six triadic factors which discriminated in favor of the high mean gain teachers at over a twenty-five percent difference between the percentage of high mean gain teachers and the percentage of low mean gain teachers. Only the first eleven triadic factors which favored the high mean gain group at over a forty-two percent difference are listed here. The eleven best triads were:

(1) married, no relationship to MR children other than teaching, and scores above the median on heterosexuality;

(2) married, scores above the median on heterosexuality, and scores above the median on the SAQ;

(3) choice of grade level to teach at preschool through third grade, choice of TMR as type of child to teach, and scores above the median on heterosexuality;

(4) married, two or three years teaching TMR children, and no relationship to MR other than teaching;

(5) married, two or three years teaching TMR children, and scores above the median on heterosexuality;

TABLE 32
SOCIAL SKILLS
CAIN LEVINE 1-3
TRIADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS					LOW MEAN GAIN TEACHER FACTORS				
Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Lo $\overline{X}$ Tchrs.	% Diff.	Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Lo $\overline{X}$ Tchrs.	% Diff.
2, 20, 35	2, 1, 1	64.3	0	64.3	5, 6, 13	2, 2, 1	0	50.0	50.0
2, 35, 37	2, 1, 1	57.1	0	57.1	6, 13, 35	2, 1, 2	0	50.0	50.0
11, 12, 35	1, 1, 1	64.3	7.1	57.2	9, 34, 35	1, 1, 2	0	50.0	50.0
2, 13, 20	2, 2, 1	50.0	7.1	42.9	12, 30, 35	1, 2, 2	0	50.0	50.0
2, 13, 35	2, 2, 1	42.9	0	42.9	30, 33, 35	2, 1, 2	0	50.0	50.0
2, 28, 35	2, 1, 1	42.9	0	42.9	5, 6, 35	2, 2, 2	0	42.9	42.9
2, 33, 35	2, 2, 1	42.9	0	42.9	5, 11, 13	2, 2, 1	0	42.9	42.9
13, 20, 35	2, 1, 1	42.9	0	42.9	5, 13, 35	2, 1, 2	0	42.9	42.9
15, 35, 37	3, 1, 1	42.9	0	42.9	5, 13, 38	2, 1, 2	0	42.9	42.9
20, 35, 37	1, 1, 1	42.9	0	42.9	6, 13, 29	2, 1, 1	0	42.9	42.9
28, 35, 37	1, 1, 1	42.9	0	42.9	6, 13, 38	2, 1, 2	0	42.9	42.9
2, 15, 35	2, 3, 1	42.9	7.1	35.8	29, 35, 38	1, 2, 2	0	42.9	42.9
2, 27, 35	2, 1, 1	42.9	7.1	35.8	2, 29, 38	2, 1, 2	0	35.7	35.7
2, 34, 35	2, 1, 1	35.7	0	35.7	5, 6, 29	2, 2, 1	0	35.7	35.7
4, 23, 35	2, 2, 1	35.7	0	35.7	5, 6, 38	2, 2, 1	7.1	42.9	35.8
4, 24, 35	2, 1, 1	42.9	7.1	35.8	5, 11, 35	2, 1, 2	0	35.7	35.7
4, 27, 35	2, 2, 1	35.7	0	35.7	5, 12, 13	2, 1, 1	0	35.7	35.7
7, 13, 20	2, 2, 1	42.9	7.1	35.8	5, 13, 29	2, 1, 1	0	35.7	35.7

TABLE 32
CON'T.
SOCIAL SKILLS
CAIN LEVINE 1-3
TRIADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS					LOW MEAN GAIN TEACHER FACTORS				
Factors	Levels	% Hi $\bar{X}$ Tchrs.	% Lo $\bar{X}$ Tchrs.	% Diff.	Factors	Levels	% Hi $\bar{X}$ Tchrs.	% Lo $\bar{X}$ Tchrs.	% Diff.
13,15,35	2,3,1	35.7	0	35.7	5,29,38	2,1,2	0	35.7	35.7
13,35,37	2,1,1	35.7	0	35.7	5,35,38	2,2,2	0	35.7	35.7
15,17,35	3,1,1	35.7	0	35.7	6,9,38	2,1,2	0	35.7	35.7
15,27,35	3,1,1	42.9	7.1	35.8	6,29,35	2,1,2	0	35.7	35.7
15,28,35	3,1,1	35.7	0	35.7	6,29,38	2,1,2	0	35.7	35.7
15,28,37	3,1,1	35.7	0	35.7	6,35,38	2,2,2	0	35.7	35.7
17,35,37	2,1,1	35.7	0	35.7	7,9,35	2,1,2	0	35.7	35.7
34,35,36	2,1,2	42.9	7.1	35.8	13,29,35	1,1,2	0	35.7	35.7
2,5,15	2,3,3	28.6	0	28.6	13,29,38	1,1,2	0	35.7	35.7
2,5,35	2,3,1	28.6	0	28.6	13,35,38	1,2,2	0	35.7	35.7
2,13,27	2,2,1	28.6	0	28.6	29,30,35	1,2,2	0	35.7	35.7
2,13,37	2,2,1	28.6	0	28.6	29,34,35	1,1,2	0	35.7	35.7
2,15,27	2,3,1	42.9	14.3	28.6	29,35,37	1,2,2	0	35.7	35.7
2,15,28	2,3,1	35.7	7.1	28.6	33,35,37	1,2,1	0	35.7	35.7
2,15,37	2,3,1	35.7	7.1	28.6	5,29,35	2,1,2	0	28.6	28.6
2,27,28	2,1,1	35.7	7.1	28.6	6,13,34	2,1,1	0	28.6	28.6
2,27,37	2,1,1	42.9	14.3	28.6	6,34,35	2,1,2	0	28.6	28.6

TABLE 32
CON'T.
SOCIAL SKILLS
CAIN LEVINE 1-3
TRIADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS

Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Lo $\overline{X}$ Tchrs.	% Diff.
5, 13, 15	3, 2, 3	28.6	0	28.6
5, 13, 19	3, 2, 1	28.6	0	28.6
5, 13, 20	3, 2, 1	28.6	0	28.6
5, 13, 35	3, 2, 1	28.6	0	28.6
5, 15, 28	3, 3, 1	28.6	0	28.6
5, 15, 35	3, 3, 1	28.6	0	28.6
12, 22, 35	1, 1, 1	35.7	7.1	28.6
13, 15, 27	2, 3, 1	28.6	0	28.6
13, 27, 35	2, 1, 1	28.6	0	28.6
13, 28, 35	2, 1, 1	28.6	0	28.6
14, 18, 37	2, 1, 1	35.7	7.1	28.6
14, 24, 35	2, 1, 1	35.7	7.1	28.6
15, 20, 35	3, 1, 1	28.6	0	28.6
15, 27, 28	3, 1, 1	35.7	7.1	28.6
15, 27, 37	3, 1, 1	35.7	7.1	28.6
19, 22, 27	1, 2, 1	28.6	0	28.6
20, 27, 35	1, 1, 1	28.6	0	28.6

LOW MEAN GAIN TEACHER FACTORS

Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Lo $\overline{X}$ Tchrs.	% Diff.
7, 34, 35	2, 1, 2	0	28.6	28.6
10, 29, 38	2, 1, 2	0	28.6	28.6
10, 35, 38	2, 2, 2	0	28.6	28.6
13, 29, 37	1, 1, 2	0	28.6	28.6
13, 34, 35	1, 1, 2	0	28.6	28.6
29, 37, 38	1, 2, 2	7.1	35.7	28.6
34, 35, 37	1, 2, 2	0	28.6	28.6
34, 35, 38	1, 2, 2	0	28.6	28.6
35, 37, 38	2, 2, 2	0	28.6	28.6

TABLE 32
CON'T.
SOCIAL SKILLS
CAIN LEVINE 1-3
TRIADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS

Factors	Levels	% Hi $\bar{X}$ Tchrs.	% Lo $\bar{X}$ Tchrs.	% Diff.
20, 28, 35	1, 1, 1	28.6	0	28.6
22, 27, 35	1, 2, 1	35.7	7.1	28.6
23, 25, 38	2, 1, 1	28.6	0	28.6
27, 28, 35	1, 1, 1	28.6	0	28.6

LOW MEAN GAIN TEACHER FACTORS

Factors	Levels	% Hi $\bar{X}$ Tchrs.	% Lo $\bar{X}$ Tchrs.	% Diff.

NONE

(6) married, scores above the median on intraception and above the median on heterosexuality;

(7) married, scores below the median on change, and scores above the median on heterosexuality;

(8) two or three years teaching TMR children, no relationship to MR other than teaching, and scores above the median on heterosexuality;

(9) three or more years teaching normal children, scores above the median on heterosexuality, and scores above the median on the SAQ;

(10) no relationship to MR other than teaching, scores above the median on heterosexuality, and scores above the median on the SAQ;

(11) scores above the median on intraception, above the median on heterosexuality, and above the median on the SAQ.

Forty-four triads on Table 32 were found to discriminate in favor of the low mean gain teacher group. Only the first twelve triads which favored the low mean gain group at over a forty-two percent difference between the percentage of high mean gain teachers and low mean gain teachers are presented here. The low mean gain triadic factors were:

(1) one or two children in the family, one or two children living at home, and one year of teaching TMR children;

(2) one or two children living at home, one year of teaching TMR children, and scores below the median on heterosexuality;

(3) level of student teaching at kindergarten through third grade, scores above the median on endurance, and scores below the median on heterosexuality;

(4) choice of TMR as type of child to teach, scores below the median on dominance, and scores below the median on heterosexuality;

(5) scores below the median on dominance, above the median on change, and below the median on heterosexuality;

(6) one or two children in the family, one or two children living at home, and scores below the median on heterosexuality;

(7) one or two children living in the family, choice of grade level to teach at kindergarten through third grade, and one year of teaching TMR children;

(8) one or two children living in the family, one year of teaching TMR children, and scores below the median on heterosexuality;

(9) one or two children living in the family, one year of teaching TMR children, and below the median on age;

(10) one or two children living at home, one year of teaching TMR children, and scores above the median on succorance;

(11) one or two children living at home, one year of teaching TMR children, and below the median on age.

(12) scores above the median on succorance, below the median on heterosexuality, and below the median on age.

SOCIAL SKILLS SCORE SUMMARY

This section has described the process whereby groups of teachers were established on the basis of mean pupil Social Skills gain on the Cain Levine Social Competency Scale. Two groups of teachers, a high mean Social Skills gain group and a low mean

Social Skills gain group were established for each of three Cain Levine comparisons: CL1 to CL2, CL2 to CL3, and CL1 to CL3 (i.e., first year gain, second year gain, and total gain).

Teacher information concerning attitudes, personality and biographical data was coded by the investigators and examined by the IBM 360:67 Computer to determine if there were differences between the teachers whose students showed high gain on the Social Skills subscale of the Cain Levine compared to those teachers whose students showed little or no gain on the Social Skills subscale of the Cain Levine.

Single factors, dyadic factors, and triadic factors were all examined. Whenever a difference of twenty-five percent or more occurred between the two teacher groups established from class scores on CL1 to CL2, CL2 to CL3, or CL1 to CL3, the factor or combination of factors which showed the difference was hypothesized as a discriminator between the teacher groups.

Results were presented which listed the single factors, dyadic factors, and triadic factors which discriminated between the teacher groups. Single factors which discriminated between the groups of teachers were found to be attitude score on the SAQ, the personality variable of heterosexuality, and biographical information concerning number of children in the family, number of children living at home, choice of occupation, years teaching TMR children, and years teaching normal children.

Dyadic factors which discriminated between the groups of teachers were the attitude score on the MTAI in combination with each of the personality variables of autonomy and heterosexuality. Another dyad which discriminated between the teacher groups was the attitude score on the SAQ combined with the score on the heterosexuality personality variable. Dyads which combined the attitude score on the SAQ with each of the following biographical information variables: choice of occupation, years of teaching TMR children and years teaching normal children, were also found.

Dyadic factors which discriminated between the groups of teachers on personality variables were evident. The personality variable of heterosexuality was found to discriminate between the groups in combination with each of the following personality variables: order, intraception, succorance, dominance, abasement, nurturance, endurance, and aggression. The personality variable of autonomy also combined with succorance.

Dyads which discriminated between the groups of teachers on personality variables in combination with variables on biographical data were discovered. The personality variable of heterosexuality was found in combination with each of the following variables on biographical information: marital status, number of children in the family, number of children at home, college degree earned, choice of occupation, choice of type of child to teach, years teaching TMR children, years teaching normal children, total years teaching experience, teacher preparation hours outside the classroom, other activities and interests, and relationship to MR other than teaching; the personality variable of order combined with teacher preparation hours outside the classroom; the personality variable of affiliation combined with years teaching normal children; the personality variable of nurturance combined with number of children living at home; and the personality variable of succorance combined with age.

Dyads which discriminated between the groups of teachers on biographical information variables were also found. The variable number of children in the family combined with each of the following variables: number of children living at home, number of years teaching TMR children, and number of years teaching normal children; and the variable years teaching TMR children combined with number of children living at home and years teaching normal children.

One hundred and twenty-two triads discriminated between the groups of teachers. Only the results of the best twenty-three triads determined by greater differences between the groups are summarized here. One triad was found which discriminated between the groups of teachers on the attitude score of the SAQ in combination with two personality variables, intraception and heterosexuality. The SAQ score also combined with the personality variable of heterosexuality and the following biographical information variables: marital status, years teaching normal children, and relationship to MR other than teaching.

One triad which discriminated between the teachers on three personality variables was found. The variables included dominance, change, and heterosexuality.

Triads which discriminated between the teachers on two personality factors and one factor concerning biographical data were discovered. The personality variable of heterosexuality combined with each of the following variable pairs: intraception and marital status, change and marital status, endurance and level of student teaching, dominance and choice of type of child to teach, and succorance and age.

Triads which discriminated between the teachers on one personality factor and two factors concerning biographical data were found. The personality variable of heterosexuality combined with each of the following variable pairs: marital status and relationship to MR other than teaching, choice of grade level to teach and choice of type of child to teach, marital status and years teaching TMR children, years teaching TMR children and relationship to MR other than teaching, number of children at home and years teaching TMR children, number of children in the family and years teaching TMR children. The personality variable of succorance combined with number of children at home and years teaching TMR children.

Triads which discriminated between the teachers on three factors concerning biographical data were also found. The variables number of children in the family and years teaching TMR children combined with each of the variables number of children at home, choice of grade level to teach, and age. The factor of years teaching TMR children also combined with marital status and relationship to MR other than teaching as well as number of children at home and age.

INITIATIVE

RESULTS: INITIATIVE SCORE COMPARISONS

The sample of teachers selected on the basis of pupil gain on Initiative from CL1 to CL2 was composed of thirty-nine teachers of TMR children. Only those teachers who had administered CLs to the same children in the fall of 1965 and the fall of 1966 were included in the sample. A class mean percentage gain score was computed on pupil gain in Initiative for each of the thirty-nine teachers. The class means were then ranked from the highest to the lowest mean gain class. Since the group differences program required an equal number in each group for the comparison process, sixteen teachers were selected from each extreme of the class mean distribution. Therefore, thirty-two teachers were included in the group differences sample: sixteen high mean percentage gain class teachers and sixteen low mean percentage gain class teachers. The seven teachers whose class means clustered around the median of the distribution were eliminated to maintain greater difference between the two teacher groups.

The sample of teachers selected on the basis of pupil gain on Initiative from CL2 to CL3 was composed of fifty-nine teachers of TMR children. Only those teachers who had administered CLs to the same children in the fall of 1966 and the spring of 1967 were included in the sample. A class mean percentage gain score was computed on pupil gain in Initiative for each of the fifty-nine teachers. The class means were ranked from the highest to the lowest mean gain class and twenty-four teachers were selected from each extreme of the class mean distribution. Therefore, forty-eight teachers were included in the group differences sample: twenty-four high mean percentage gain class teachers and twenty-four low mean percentage gain class teachers. The eleven teachers whose class means clustered around the median of the distribution were eliminated to maintain greater difference between the two teacher groups.

The sample of teachers selected on the basis of pupil gain on Initiative from CL1 to CL3 was composed of thirty-three teachers of TMR children. Only those teachers who had administered CLs to the same children in the fall of 1965 and the spring of 1967 were included in the sample. A class mean percentage gain score was computed on pupil gain in Initiative for each of the thirty-three teachers. The class means were ranked from the highest to the lowest mean gain class and fourteen teachers were selected from each extreme of the class mean distribution. Therefore, twenty-eight teachers were included in the group differences sample: fourteen high mean percentage gain class teachers and fourteen low mean percentage gain class teachers. The five teachers whose class means clustered around the median of the distribution were eliminated to maintain greater difference between the two teacher groups.

The procedure followed in the group differences program for Initiative is illustrated by Figure 7. A pool of teacher variables consisted of information on teacher attitudes, personality, and biographical data. The Initiative mean percentage gain on the CL was computed in all the classes from CL1 to CL2, CL2 to CL3, and CL1 to CL3. Two teacher groups were established as described above on the basis of either a high Initiative mean percentage gain class or a low mean percentage gain class from CL1 to CL2; similarly, two teacher groups were also established for each of CL2 to CL3 and CL1 to CL3.

Once the teacher groups were established, the Computer Search for Group Differences program was used to select from the pool of teacher variables single factors, dyadic factors, and triadic factors which discriminated between the two groups. Whenever single factors, dyadic factors, and triadic factors were found to discriminate between the two teacher groups involved in the CL1 to CL2 administrations, the same factors were examined for the teacher groups involved in the CL2 to CL3 administrations. Only the factors which discriminated between the teacher groups established from pupil scores on both CL1 to CL2 and CL2 to CL3 were selected as having a close relationship to growth in the Initiative aspect of social competency.

Since the pupil gain scores on Initiative from CL1 to CL3 covered a period of one and one-half years, the Initiative scores from CL1 to CL3 were considered the most stable of all the CL administrations. Therefore, a separate group differences

SELECTION OF TEACHER FACTORS RELATING TO PUPIL GROWTH ON INITIATIVE FOR THE CAIN LEVINE.

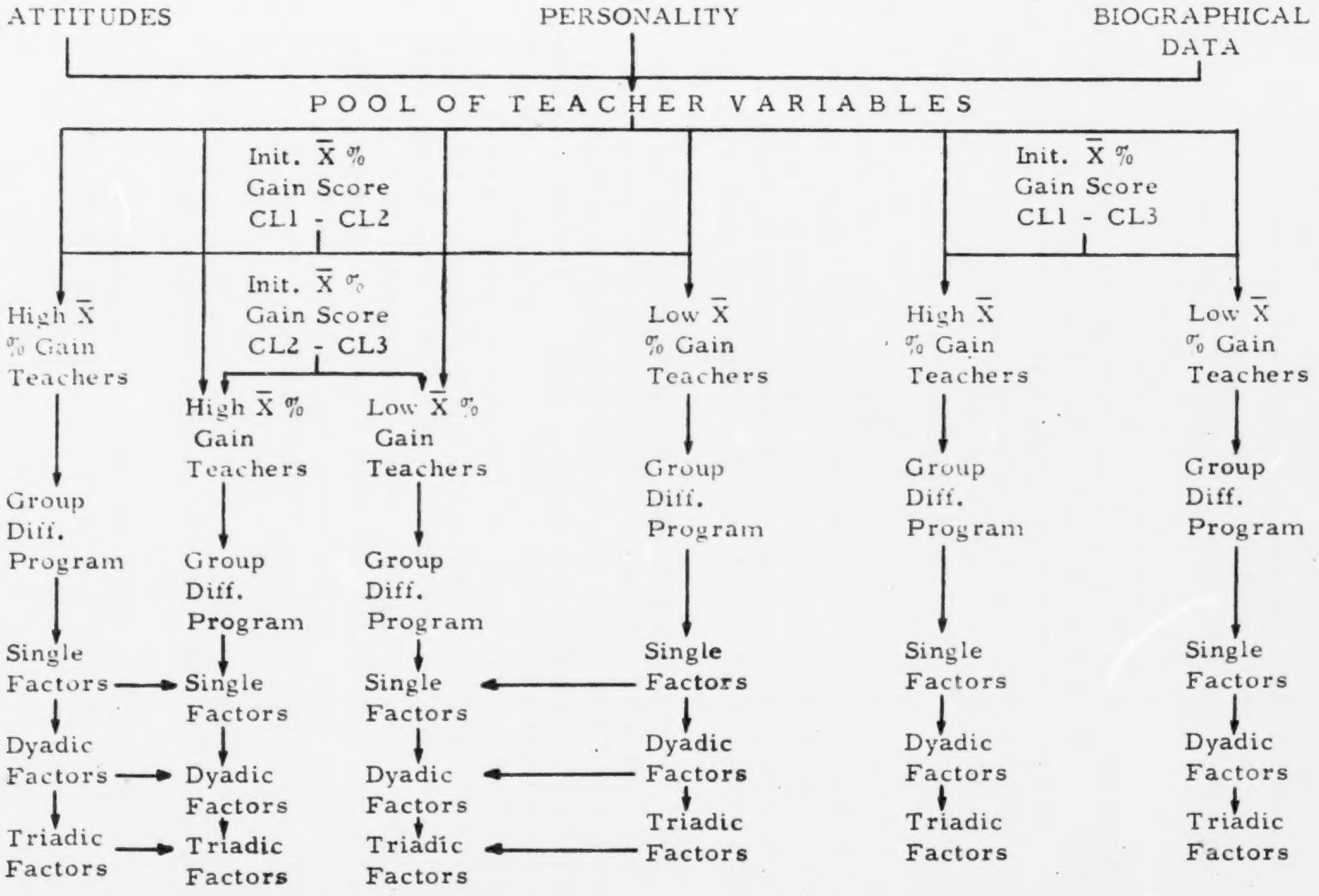
ATTITUDES
PERSONALITY
BIOGRAPHICAL DATA
POOL OF TEACHER VARIABLES
Init. $\bar{X}$ % Gain Score CL1 - CL2
Init. $\bar{X}$ % Gain Score CL1 - CL3
Init. $\bar{X}$ % Gain Score CL2 - CL3
High $\bar{X}$ % Gain Teachers
High $\bar{X}$ % Gain Teachers
Low $\bar{X}$ % Gain Teachers
Low $\bar{X}$ % Gain Teachers
High $\bar{X}$ % Gain Teachers
Low $\bar{X}$ % Gain Teachers
Group Diff. Program
Single Factors
Dyadic Factors
Triadic Factors

Figure 7:

analysis was made of the teacher groups established on the basis of the Initiative class mean percentage gain scores from CL1 to CL3. The single, dyadic and triadic factors which discriminated between these two teacher groups were also hypothesized as having a significant relationship to growth in the Initiative aspect of social competency.

Single Factor Results

Table 33 lists the single factors which discriminated between the high mean gain teachers and low mean gain teachers in the groups established on the basis of pupil Initiative gain scores from CL1 to CL2.

The left side of Table 33 lists the factors and levels which discriminated between the two teacher groups in favor of the group of teachers whose students showed a high mean percentage gain on Initiative from CL1 to CL2. The first factor is listed as factor 35 and the level represented is level 1. The reader is referred to Table 9 which reveals that factor 35 at level 1 signifies scores above the median on heterosexuality. The column headed % Difference for High Mean Teachers refers to the difference between the percentage of high mean gain teachers and the percentage of low mean gain teachers who showed the factor and level in question with the difference being in favor of the high mean teachers. The factors which showed the greatest difference were the most discriminating factors between the two teacher groups.

The right side of Table 33 lists the factors and levels which discriminated between the two teacher groups in favor of the teachers whose students showed a low mean gain on Initiative from CL1 to CL2. The percentage difference between the high mean gain group of teachers and the low mean gain group of teachers always favors the low mean gain group of teachers.

The Table 33 factors and levels were all suggested as possible discriminators between the teachers whose students showed high mean gain on Initiative from CL2 to CL3 and the teachers whose students showed low mean gain on Initiative from CL2 to CL3.

TABLE 33
INITIATIVE
CAIN LEVINE 1-2
SINGLE FACTORS

HIGH MEAN GAIN TEACHER FACTORS

Factors	Levels	% Diff. for High Mean Tchrs.
35	1	43.8
29	2	37.5
18	1	31.3
31	2	31.3
10	1	25
15	1	25
16	2	25
17	2	25
20	2	25
21	2	25
32	1	25

LOW MEAN GAIN TEACHER FACTORS

Factors	Levels	% Diff. for Low Mean Tchrs.
35	2	43.8
29	1	37.5
31	1	31.3
16	1	25
20	1	25
21	1	25
32	2	25

Table 34 lists the single factors and levels which discriminated between the high mean gain teachers and the low mean gain teachers over both CL1 to CL2 and CL2 to CL3.

Table 34 lists factor 35 level 1 as the only factor and level which favored the high mean gain teacher group. Table 9 reveals that factor 35, level 1 refers to scores above the median on heterosexuality. The percentages for the high mean gain teachers and the low mean gain teachers with the difference between the percentages for the groups from CL1 to CL2 and CL2 to CL3 are also listed in Table 34.

Table 34 also lists factor 35, level 2 as the only factor and level which favored the low mean gain teacher groups. Table 9 reveals that factor 35 level 2 refers to scores below the median on heterosexuality. The percentages of the teachers in each group who showed factor 35 at level 2 as well as the difference between the percentages are also listed.

Table 35 lists the single factors and levels which discriminated between the high mean gain teachers and the low mean gain teachers in the groups based on pupil Initiative gain from CL1 to CL3.

The upper portion of Table 35 lists the factors and levels which discriminated between the two teacher groups in favor of the high mean gain teachers. The following single factors were found to favor the high mean gain teachers:

(1) no children living at home;

(2) scores above the median on heterosexuality;

(3) choice of occupation as special education teacher;

(4) no experience teaching EMR children;

(5) three or more years teaching normal children;

(6) scores below the median on the MTAI;

TABLE 34
INITIATIVE
CAIN LEVINE 1-2, 2-3
SINGLE FACTORS

(A) HIGH MEAN GAIN TEACHERS FACTORS

TEACHERS CL1 TO CL2					TEACHERS CL2 TO CL3		
Factor	Level	% Hi $\overline{X}$ Teachers	% Lo $\overline{X}$ Teachers	Percent Difference	% Hi $\overline{X}$ Teachers	% Lo $\overline{X}$ Teachers	Percent Difference
35	1	68.8	25.0	43.8	75.0	25.0	50.0
(B) LOW MEAN GAIN TEACHER FACTORS							
35	2	31.3	75.0	43.8	25.0	75.0	50.0

TABLE 35
INITIATIVE
CAIN LEVINE 1-3
SINGLE FACTORS

(A) HIGH MEAN GAIN TEACHER FACTORS

Factor	Level	% High Mean Teachers	% Low Mean Teachers	Percent Difference
6	1	57.1	21.4	35.7
35	1	78.6	42.9	35.7
10	1	57.1	28.6	28.5
14	2	71.4	42.9	28.5
15	3	64.3	35.7	28.6
21	2	64.3	35.7	28.6
28	1	64.3	35.7	28.6
29	2	57.1	28.6	28.6

(B) LOW MEAN GAIN TEACHER FACTORS

Factor	Level	% High Mean Teachers	% Low Mean Teachers	Percent Difference
6	2	21.4	57.1	35.7
10	2	14.3	50.0	35.7
35	2	21.4	57.1	35.7
21	1	35.7	64.3	28.6
28	2	35.7	64.3	28.6
29	1	42.9	71.4	28.5

(7) scores above the median on intraception;

(8) scores below the median on succorance.

The lower portion of Table 35 lists the single factors and levels which discriminated between the two teacher groups in favor of the low mean gain teachers. The following factors were found to favor the low mean gain teachers:

(1) one or two children living at home;

(2) choice of occupation as regular education teacher;

(3) scores below the median on heterosexuality;

(4) scores above the median on the MTAI;

(5) scores below the median on intraception;

(6) scores above the median on succorance.

Dyadic Factor Results

Table 36 presents dyadic factors and levels which discriminated between the high mean gain teachers and the low mean gain teachers in the groups based on pupil Initiative gain from CL1 to CL2. The left side of Table 36 lists the factors and levels which favored the high mean teacher group, whereas the right side of Table 36 lists the factors and levels which favored the low mean teacher group.

The first dyad on Table 36 is composed of factors 29 and 34. The levels for these two factors are 2 and 2. The first 2 refers to level 2 under factor 29 and the second 2 refers to level 2 under factor 34. When Table 9 is consulted, the reader finds that factor 29 at level 2 refers to scores below the median on succorance and factor 34 at level 2 refers to scores below the median on endurance. The column headed % Difference for High Mean Teachers refers to the difference between the percentage of high mean teachers and the percentage of low mean teachers who showed dyads in question.

TABLE 36
INITIATIVE
CAIN LEVINE 1-2
DYADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS			LOW MEAN GAIN TEACHER FACTORS		
Factors	Levels	% Diff. for High Mean Tchrs.	Factors	Levels	% Diff. for Low Mean Tchrs.
29,34	2,2	43.8	21,35	1,2	50.0
29,35	2,1	43.8	32,35	2,2	43.8
31,35	2,1	43.8	12,35	1,2	37.5
6,35	1,1	37.5	16,29	1,1	37.5
7,21	2,2	37.5	16,35	1,2	37.5
16,21	2,2	37.5	18,32	2,2	37.5
16,32	2,1	37.5	20,21	1,1	37.5
17,29	2,2	37.5	20.25	1,2	37.5
17,31	2,2	37.5	21,29	1,1	37.5
6,29	1,2	31.3	21,31	1,1	37.5
10,20	1,2	31.3	29,31	1,1	37.5
11,21	1,2	31.3	29,34	1,2	37.5
14,21	2,2	31.3	29,35	1,2	37.5
16,35	2,1	31.3	31,32	1,2	37.5
16,23	2,2	31.3	2,21	2,1	31.3
16,31	2,2	31.3	4,21	1,2	31.3
17,35	2,1	31.3	17,32	1,2	31.3
18,35	1,1	31.3	18,35	2,2	31.3
18,33	1,2	31.3	23,29	1,1	31.3
21,25	2,1	31.3	23,35	1,2	31.3
21,32	2,1	31.3	27,29	1,2	31.3
31,35	2,2	31.3	27,35	1,2	31.3
34,35	2,1	31.3	16,31	1,1	25
13,29	2,2	25	18,33	2,2	25
14,35	1,1	25	19,21	1,1	25
16,29	2,2	25	20,28	1,1	25
16,27	2,1	25	23,32	1,2	25
17,18	2,1	25	26,35	2,2	25
18,21	1,2	25	29,30	1,2	25
18,29	1,2	25			
21,29	2,2	25			

TABLE 36
CON'T.
INITIATIVE
CAIN LEVINE 1-2
DYADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS			LOW MEAN GAIN TEACHER FACTORS		
Factors	Levels	% Diff. for High Mean Tchrs.	Factors	Levels	% Diff. for Low Mean Tchrs.
21, 26	2, 1	25			
22, 29	1, 2	25		NONE	
30, 35	2, 2	25			
32, 35	1, 1	25			

Therefore, when the high mean gain group and the low mean gain group were examined with regard to factor 29, level 2 and factor 34, level 2, it was found that after subtracting the percentage of low mean gain teachers from the percentage of high mean gain teachers, a difference of 43.8 percent remained in favor of the high mean gain teachers.

The remaining factors and levels on Table 36 can be examined in the above fashion. The factors and levels on the right side of Table 36 refer to those which favored the low mean gain group over the high mean gain group. Likewise, the column headed % Difference for Low Mean Teachers refers to the percentage which remained after the subtraction of the percentage of high mean gain teachers who showed the factors and levels in question from the percentage of low mean gain teachers. The result always favors the low mean gain teachers.

The Table 36 factors and levels were all suggested as possible discriminators between the teachers whose students showed high mean gain on Initiative from CL2 to CL3 and the teachers whose students showed low mean gain on Initiative from CL2 to CL3.

Table 37 lists the dyadic factors and levels which discriminated between the high mean gain teachers and the low mean gain teachers over both CL1 to CL2 and CL2 to CL3.

The upper portion of Table 37 lists the dyads which favored the high mean gain teacher groups. The lower portion of Table 37 lists dyads which favored the low mean gain teacher groups. On the left side of Table 37 are the percentages of teachers in each group who showed the dyadic combinations in question. The teacher groups were based on pupil Initiative gain from CL1 to CL2. The difference between the two percentages is also given. On the right side of Table 37 are the percentages of teachers in the high mean gain group and the percentage of teachers in the low mean group who showed dyads in question. The teacher groups were based on pupil Initiative gain from CL2 to CL3. The difference between the two percentages is also noted.

TABLE 37
INITIATIVE
CAIN LEVINE 1-2, 2-3
DYADIC FACTORS

(A) HIGH MEAN GAIN TEACHER FACTORS

		TEACHERS CL1 TO CL2			TEACHERS CL2 TO CL3		
Factor	Levels	% High $\overline{X}$ Teachers	% Low $\overline{X}$ Teachers	Percent Difference	% High $\overline{X}$ Teachers	% Low $\overline{X}$ Teachers	Percent Difference
31,35	2,1	56.3	12.5	43.8	50.0	12.5	37.5
6,35	1,1	50.0	12.5	37.5	50.0	16.7	33.3
16,35	2,1	37.5	6.3	31.3	41.7	12.5	29.2
17,35	2,1	50.0	18.8	31.3	41.7	16.7	25.0
34,35	2,1	50.0	18.8	31.3	45.8	20.8	25.0
32,35	1,1	37.5	12.5	25.0	41.7	16.7	25.0

(B) LOW MEAN GAIN TEACHER FACTORS

12,35	1,2	25.0	62.5	37.5	20.8	58.3	37.5
20,35	1,2	25.0	62.5	37.5	20.8	50.0	29.2
27,35	2,2	25.0	50.0	25.0	16.7	41.7	25.0

The following dyads were found to discriminate in favor of the high mean gain group of teachers:

(1) scores below the median on abasement and above the median on heterosexuality;

(2) no children living at home and scores above the median on heterosexuality;

(3) number of years teaching experience below the median and scores above the median on heterosexuality;

(4) teachers' preparation outside class less than ten hours per week and scores above the median on heterosexuality;

(5) scores below the median on endurance and above the median on heterosexuality;

(6) scores above the median on nurturance and above the median on heterosexuality.

The following dyads discriminated between the two groups of teachers in favor of the low mean gain group:

(1) choice of type of child to teach a TMR child and scores below the median on heterosexuality;

(2) relationship to MR only in the classroom as a teacher, and scores below the median on heterosexuality;

(3) scores above the median on affiliation and below the median on heterosexuality;

(4) scores below the median on dominance and below the median on heterosexuality.

Table 38 lists the dyadic factors which discriminated between the high mean gain teachers and the low mean gain teachers in the groups based on pupil Initiative gain from CL1 to CL3.

TABLE 38
INITIATIVE
CAIN LEVINE 1-3
DYADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS

Factors	Levels	% Hi $\bar{X}$ Tchrs.	% Lo $\bar{X}$ Tchrs.	% Diff.
10,21	1,2	42.9	0	42.9
14,21	2,2	57.1	14.3	42.8
14,35	2,1	57.1	14.3	42.8
21,23	2,1	42.9	0	42.9
6,10	1,1	35.7	0	35.7
10,29	1,2	35.7	0	35.7
10,35	1,1	42.9	7.1	35.8
14,29	2,2	50.0	14.3	35.7
15,35	3,1	50.0	14.3	35.7
21,35	2,1	50.0	14.3	35.7
28,35	1,1	42.9	7.1	35.8
29,35	2,1	50.0	14.3	35.7
10,14	1,2	42.9	14.3	28.6
14,15	2,3	50.0	21.4	28.6
15,29	3,2	35.7	7,1	28.6
16,21	2,2	35.7	7.1	28.6
21,28	2,1	35.7	7.1	28.6
28,29	1,2	35.7	7.1	28.6
28,38	2,2	35.7	7.1	28.6

LOW MEAN GAIN TEACHER FACTORS

Factors	Levels	% Hi $\bar{X}$ Tchrs.	% Lo $\bar{X}$ Tchrs.	% Diff.
21,29	1,1	14.3	57.1	42.8
6,29	2,1	14.3	50.0	35.7
10,35	2,2	0	35.7	35.7
6,21	2,1	7.1	35.7	28.6
6,28	2,2	7.1	35.7	28.6
6,35	2,2	7.1	35.7	28.6
7,13	3,1	7.1	35.7	28.6
10,28	2,2	7.1	35.7	28.6
10,29	2,1	0	28.6	28.6
17,34	1,1	7.1	35.7	28.6
21,28	1,2	7.1	35.7	28.6
21,35	1,2	7.1	35.7	28.6
28.29	2,1	14.3	42.9	28.6
28,35	2,2	0	28.6	28.6
29,35	1,2	14.3	42.9	28.6

The left side of Table 38 presents the dyadic factors and levels which favored the high mean gain teachers. The following dyads favored the high mean gain group of teachers:

(1) choice of occupation as a special education teacher and scores below the median on the MTAI;

(2) no experience teaching EMR children and scores below the median on the MTAI;

(3) no experience teaching EMR children and scores above the median on heterosexuality;

(4) scores below the median on the MTAI and above the median on deference;

(5) no children living at home and choice of occupation as a special education teacher;

(6) choice of occupation as a special education teacher and scores below the median on succorance;

(7) choice of occupation as a special education teacher and scores above the median on heterosexuality;

(8) no experience teaching EMR children and scores below the median on succorance;

(9) three or more years teaching normal children and scores above the median on heterosexuality;

(10) scores below the median on the MTAI and above the median on heterosexuality;

(11) scores above the median on intraception and above the median on heterosexuality;

(12) scores below the median on succorance and above the median on heterosexuality;

(13) choice of occupation as a special education teacher and no experience teaching EMR children;

(14) no experience teaching EMR children and three or more years teaching normal children;

(15) three or more years teaching normal children and scores below the median on succorance;

(16) total years teaching experience below the median and scores below the median on the MTAI;

(17) scores below the median on the MTAI and scores above the median on intraception;

(18) scores above the median on intraception and below the median on succorance;

(19) scores below the median on intraception and below the median on age.

The right side of Table 38 presents the combinations of dyadic factors and levels which favored the low mean gain teachers. The following dyadic factors and levels favored the low mean gain group of teachers:

(1) scores above the median on the MTAI and above the median on succorance;

(2) one or two children living at home and scores above the median on succorance;

(3) choice of occupation a regular education teacher and scores below the median on heterosexuality;

(4) one or two children living at home and scores above the median on the MTAI;

(5) one or two children living at home and scores below the median on intraception;

(6) one or two children living at home and scores below the median on heterosexuality;

(7) highest college degree earned an MA or above and one year of teaching TMR children;

(8) choice of occupation a regular education teacher and scores below the median on intraception;

(9) choice of occupation a regular education teacher and scores above the median on succorance;

(10) less than ten hours per week of teachers' preparation outside the classroom and scores above the median on endurance;

(11) scores above the median on the MTAI and scores below the median on intraception;

(12) scores above the median on the MTAI and below the median on heterosexuality;

(13) scores below the median on intraception and above the median on succorance;

(14) scores below the median on intraception and below the median on heterosexuality;

(15) scores above the median on succorance and below the median on heterosexuality.

Triadic Factor Results

Table 39 lists the triadic factors and levels which discriminated between the high mean gain teachers and the low mean gain teachers in the groups based on pupil Initiative score from CL1 to CL2. The left side of Table 39 lists the triadic factors and levels which favored the high mean gain group of teachers, whereas the right side of Table 39 lists the factors and levels which favored the low

TABLE 39
INITIATIVE
CAIN LEVINE 1-2
TRIADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS

Factors	Levels	% Diff. for High $\bar{X}$ Tchrs.
29, 34, 35	2, 2, 1	43.8
6, 16, 35	1, 2, 1	37.5
6, 31, 35	1, 2, 1	37.5
7, 29, 34	2, 2, 2	37,5
9, 19, 35	1, 2, 1	37.5
9, 31, 35	1, 2, 1	37.5
17, 31, 35	2, 2, 1	37.5
2, 21, 26	2, 2, 1	31.3
6, 17, 31	1, 2, 2	31.3
6, 17, 35	1, 2, 1	31.3
16, 17, 31	2, 2, 2	31.3
16, 31, 35	2, 2, 1	31.3
29, 31, 34	2, 2, 2	31.3
29, 31, 35	2, 2, 1	31.3
31, 34, 35	2, 2, 1	31.3
2, 11, 21	2, 1, 2	25.0
2, 21, 27	2, 2, 1	25.0
6, 16, 17	1, 2, 2	25.0
6, 16, 31	1, 2, 2	25.0
6, 16, 32	1, 2, 1	25.0
6, 31, 32	1, 2, 1	25.0
7, 17, 35	2, 2, 1	25.0
11, 27, 37	1, 1, 1	25.0
16, 17, 35	2, 2, 1	25.0
24, 34, 35	1, 2, 1	25.0
32, 34, 35	1, 2, 1	25.0

LOW MEAN GAIN TEACHER FACTORS

Factors	Levels	% Diff. for Low X Tchrs.
12, 16, 20	1, 1, 1	43.8
3, 19, 20	3, 2, 1	37.5
4, 19, 20	3, 2, 1	37.5
21, 32, 35	1, 2, 2	37.5
21, 35, 38	1, 2, 2	37.5
9, 35, 37	1, 2, 2	31.3
12, 21, 30	1, 1, 1	31.3
12, 23, 29	1, 1, 1	31.3
21, 29, 30	1, 1, 2	31.3
23, 32, 35	1, 2, 2	31.3
29, 30, 35	1, 2, 2	31.3
2, 12, 21	2, 1, 1	25.0
12, 20, 35	1, 1, 2	25.0
12, 27, 35	1, 1, 2	25.0
12, 30, 35	1, 2, 2	25.0
20, 27, 35	1, 1, 2	25.0
20, 30, 35	1, 2, 2	25.0
27, 30, 35	1, 2, 2	25.0

mean gain teacher group.

The first triad noted for the high mean gain teachers is composed of the factors 29, 34, and 35. The levels noted for the three factors are 2, 2, and 1. The first 2 refers to level 2 under factor 29, the second 2 refers to level 2 under factor 34, and the 1 refers to level 1 under factor 35. The reader is referred to Table 9 which shows that factor 29 at level 2 refers to scores below the median on succorance, factor 34 at level 2 refers to scores below the median on endurance, and factor 35 at level 1 refers to scores below the median on heterosexuality. By consulting Table 9, the reader can determine the other combinations of triadic factors and levels which are listed on Table 39.

The column headed % Difference for High Mean Teachers refers to the difference between the percentage of high mean teachers and the percentage of low mean teachers who showed triads in question with the difference in favor of the high mean gain teachers. The column headed % Difference for Low Mean Teachers refers to the difference between the two teacher groups with the difference in favor of the low mean gain teachers.

The Table 39 triads were all suggested as possible discriminators between the teachers whose students showed high mean gain on Initiative from CL2 to CL3 and the teachers whose students showed low mean gain on Initiative from CL2 to CL3.

Table 40 lists the triads which discriminated between the high mean gain teachers and the low mean gain teachers in the groups based on pupil gain over both CL1 to CL2 and CL2 to CL3.

The upper portion of Table 40 lists the triadic factors and levels which favored the high mean gain teachers. The lower portion of Table 40 lists triads which favored the low mean gain teacher groups.

On the left side of Table 40 are the percentages of teachers in each group who showed the factors and levels in question. The teacher groups were based on pupil Initiative gain from CL1 to CL2. The difference between the two percentages is also noted.

TABLE 40
INITIATIVE
CAIN LEVINE 1-2, 2-3
TRIADIC FACTORS

		TEACHERS CL1 TO CL2			TEACHERS CL2 TO CL3		
Factors	Levels	% High $\overline{X}$ Teachers	% Low $\overline{X}$ Teachers	Percent Difference	% High $\overline{X}$ Teachers	% Low $\overline{X}$ Teachers	Percent Difference
(A) HIGH MEAN GAIN TEACHER FACTORS							
6,31,35	1,2,1	48.3	6.3	37.5	37.5	8.3	29.2
7,17,35	2,2,1	37.5	12.5	25.0	37.5	8.3	29.2
(B) LOW MEAN GAIN TEACHER FACTORS							
9,35,37	1,2,2	6.3	37.5	31.3	4.2	33.3	29.2
12,20,35	1,1,2	25.0	50.0	25.0	16.7	41.7	25.0
20,27,35	1,1,2	18.8	43.8	25.0	12.5	37.5	25.0

On the right side of Table 40 are the percentages of teachers in the groups selected on the basis of pupil Initiative gain from CL2 to CL3. The difference between the two percentages is also noted.

The following triadic factors and levels favored the high mean gain groups of teachers:

(1) no children living at home, scores below the median on abasement, and scores above the median on heterosexuality;

(2) highest college degree earned a BA or BS degree, over ten hours per week in teacher preparation outside class, and scores above the median on heterosexuality.

The following triadic factor combinations favored the low mean gain groups of teachers:

(1) level of student teaching in kindergarten through the third grade, scores below the median on heterosexuality, and scores below the median on the SAQ;

(2) choice of type of child to teach a TMR child, relationship to MR only as a teacher in the classroom, and scores below the median on heterosexuality;

(3) relationship to MR only as a teacher in the classroom, scores above the median on affiliation, and scores below the median on heterosexuality.

Table 41 lists the triads which discriminated between the high mean gain teachers and the low mean gain teachers in the groups determined by pupil Initiative gain from CL1 to CL3. The left side of Table 41 lists the triadic factors and levels which favored the high mean gain teachers. The right side of Table 41 lists the combinations of triadic factors and levels which favored the low mean gain teachers.

TABLE 41
INITIATIVE
CAIN LEVINE 1-3
TRIADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS					LOW MEAN GAIN TEACHER FACTORS				
Factors	Levels	% Hi $\bar{X}$ Tchrs.	% Lo $\bar{X}$ Tchrs.	% Diff.	Factors	Levels	% Hi $\bar{X}$ Tchrs.	% Lo $\bar{X}$ Tchrs.	% Diff.
7, 14, 21	2, 2, 2	50.0	7.1	42.9	2, 17, 28	2, 2, 2	7.1	42.9	35.8
10, 21, 23	1, 2, 1	42.9	0	42.9	6, 7, 13	2, 3, 1	0	35.7	35.7
12, 28, 37	1, 1, 1	50.0	7.1	42.9	6, 13, 28	2, 1, 2	0	35.7	35.7
14, 21, 35	2, 2, 1	50.0	7.1	42.9	6, 13, 29	2, 1, 1	7.1	42.9	35.8
14, 23, 29	2, 1, 2	42.9	0	42.9	6, 21, 29	2, 1, 1	0	35.7	35.7
19, 24, 35	2, 2, 1	42.9	0	42.9	10, 12, 37	2, 1, 2	0	35.7	35.7
6, 10, 23	1, 1, 1	35.7	0	35.7	13, 21, 29	1, 1, 1	0	35.7	35.7
7, 21, 36	2, 1, 1	35.7	0	35.7	13, 28, 29	1, 2, 1	0	35.7	35.7
7, 22, 35	2, 1, 1	35.7	0	35.7	21, 29, 34	1, 1, 1	7.1	42.9	35.7
10, 14, 21	1, 2, 2	35.7	0	35.7	21, 29, 35	1, 1, 2	0	35.7	35.7
10, 14, 23	1, 2, 1	42.9	7.1	35.8	2, 3, 13	2, 1, 1	7.1	35.7	28.6
10, 14, 29	1, 2, 2	35.7	0	35.7	2, 12, 28	2, 1, 2	7.1	35.7	28.6
10, 21, 35	1, 2, 1	35.7	0	35.7	2, 25, 28	2, 1, 2	7.1	35.7	28.6
10, 23, 29	1, 1, 2	35.7	0	35.7	6, 7, 29	2, 3, 1	0	28.6	28.6
10, 23, 35	1, 1, 1	42.9	7.1	35.8	6, 13, 17	2, 1, 1	0	28.6	28.6
14, 21, 23	2, 2, 1	35.7	0	35.7	6, 13, 21	2, 1, 1	0	28.6	28.6
14, 23, 35	2, 1, 1	42.9	7.1	35.8	6, 13, 35	2, 1, 2	7.1	35.7	28.6

TABLE 41
CON'T.
INITIATIVE
CAIN LEVINE 1-3
TRIADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS

Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Lo $\overline{X}$ Tchrs.	% Diff.
14, 29, 35	2, 2, 1	42.9	7.1	42.9
14, 35, 38	2, 1, 2	35.7	0	35.7
15, 23, 29	3, 1, 2	35.7	0	35.7
18, 20, 23	1, 1, 1	35.7	0	35.7
18, 25, 37	1, 2, 1	35.7	0	35.7
21, 23, 35	2, 1, 1	35.7	0	35.7
23, 29, 35	1, 2, 1	35.7	0	35.7
27, 32, 35	2, 2, 1	35.7	0	35.7
28, 33, 37	1, 1, 1	35.7	0	35.7
29, 35, 38	2, 1, 2	35.7	0	35.7
2, 4, 34	2, 2, 2	35.7	7.1	28.6
2, 28, 29	2, 1, 2	35.7	7.1	28.6
6, 10, 35	1, 1, 1	28.6	0	28.6
6, 23, 35	1, 1, 1	28.6	0	28.6
6, 35, 38	1, 1, 2	28.6	0	28.6
10, 14, 35	1, 2, 1	35.7	7.1	28.6
10, 16, 35	1, 2, 1	28.6	0	28.6

LOW MEAN GAIN TEACHER FACTORS

Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Lo $\overline{X}$ Tchrs.	% Diff.
6, 17, 20	2, 1, 1	7.1	35.7	28.6
6, 17, 35	2, 1, 2	0	28.6	28.6
7, 10, 34	3, 2, 1	0	28.6	28.6
7, 17, 35	3, 1, 2	0	28.6	28.6
7, 21, 29	2, 1, 1	7.1	35.7	28.6
9, 12, 16	1, 1, 2	21.4	50.0	28.6
10, 17, 35	2, 1, 2	0	28.6	28.6
12, 25, 28	1, 1, 2	7.1	35.7	28.6
17, 29, 35	1, 1, 2	0	28.6	28.6
17, 34, 35	1, 1, 2	0	28.6	28.6
21, 28, 34	1, 2, 1	0	28.6	28.6
25, 28, 36	1, 2, 2	7.1	35.7	28.6

TABLE 41
CON'T.
INITIATIVE
CAIN LEVINE 1-3
TRIADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS

Factors	Levels	% Hi $\bar{X}$ Tchrs.	% Lo $\bar{X}$ Tchrs.	% Diff.
10, 29, 35	1, 2, 1	28.6	0	28.6
10, 35, 38	1, 1, 2	28.6	0	28.6
12, 21, 28	1, 2, 1	35.7	7.1	28.6
12, 33, 37	1, 1, 1	35.7	7.1	28.6
14, 15, 23	2, 3, 1	35.7	7.1	28.6
14, 15, 29	2, 3, 2	35.7	7.1	28.6
14, 15, 35	2, 3, 1	35.7	7.1	28.6
14, 29, 25	2, 2, 2	35.7	7.1	28.6
14, 29, 38	2, 2, 2	35.7	7.1	28.6
15, 29, 35	3, 2, 1	28.6	0	28.6
16, 21, 35	2, 2, 1	35.7	7.1	28.6
16, 23, 35	2, 1, 1	35.7	7.1	28.6
16, 29, 38	2, 2, 2	28.6	0	28.6
16, 35, 38	2, 1, 2	35.7	7.1	28.6
21, 27, 30	2, 2, 1	35.7	7.1	28.6
21, 29, 35	2, 2, 1	35.7	7.1	28.6
21, 35, 38	2, 1, 2	28.6	0	28.6

LOW MEAN GAIN TEACHER FACTORS

Factors	Levels	% Hi $\bar{X}$ Tchrs.	% Lo $\bar{X}$ Tchrs.	% Diff.

NONE

TABLE 41
CON'T.
INITIATIVE
CAIN LEVINE 1-3
TRIADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS

Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Lo $\overline{X}$ Tchrs.	% Diff.
23, 28, 29	1, 1, 2	28.6	0	28.6
23, 29, 38	1, 2, 2	28.6	0	28.6
23, 35, 38	1, 1, 2	35.7	7.1	28.6
28, 29, 35	1, 2, 1	28.6	0	28.6

LOW MEAN GAIN TEACHER FACTORS

Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Lo $\overline{X}$ Tchrs.	% Diff.

NONE

Table 41 lists fifty-five triads which discriminated in favor of the high mean gain teachers at over a twenty-five percent difference between the percentage of high mean gain teachers and the percentage of low mean gain teachers. Only the first six triads which favored the high mean gain teachers at over a forty-two percent difference are listed here. The six best triads were:

(1) highest degree earned a BS or BA, no experience teaching EMR children, and scores below the median on the MTAI;

(2) choice of occupation as a special education teacher, scores below the median on the MTAI, and scores above the median on deference;

(3) choice of type of child to teach a TMR child, scores above the median on intraception, and scores above the median on the SAQ;

(4) no experience teaching EMR children, scores below the median on the MTAI, and scores above the median on heterosexuality;

(5) no experience teaching EMR children, scores above the median on deference, and scores below the median on succorance;

(6) other activities and interests without children, scores below the median on order, and scores above the median on heterosexuality.

Twenty-nine triads were found to discriminate in favor of the low mean gain teacher group. However, since none of the triads favored the low mean gain teachers at over a forty-two percent difference between the percentage of high mean teachers and the percentage of low mean teachers, none of the triadic factors are listed here. The reader is referred to Table 9 to determine which of the factors or levels are represented by any of the numbers on the right side of Table 41.

INITIATIVE SCORE SUMMARY

This section has described the process whereby groups of teachers were established on the basis of mean pupil Initiative gain on the Cain Levine Social Competency Scale. Two groups of teachers, a high mean Initiative gain group and a low mean Initiative gain group were established for each of three Cain Levine comparisons: CL1 to CL2, CL2 to CL3, and CL1 to CL3 (i.e., first year gain, second year gain, and total gain).

Teacher information concerning attitudes, personality, and biographical data was coded by the investigators and examined by the IBM 360:67 Computer to determine if there were differences between the teachers whose students showed high gain on the Initiative subscale of the Cain Levine and the teachers whose students showed little or no gain on the Initiative subscale of the Cain Levine.

Single factors, dyadic factors, and triadic factors were all examined. Whenever a difference of twenty-five percent or more occurred between the teacher groups on both CL1 to CL2 and CL2 to CL3, or the teacher groups established from class scores on CL1 to CL3, the factor or combination of factors which showed the difference was hypothesized as a discriminator between the teacher groups.

Results were presented which listed the single factors, dyadic factors, and triadic factors which discriminated between the teacher groups selected on the basis of class Initiative gain from CL1 to CL2, from CL2 to CL3, and from CL1 to CL3.

Single factors found which discriminated between the groups of teachers were the attitude score on the MTAI; the personality variables of heterosexuality, intraception, and succorance; and biographical information concerning number of children at home, choice of occupation, experience teaching EMR children, and years teaching normal children.

Dyadic factors which discriminated between the groups of teachers on the attitude score on the SAQ in combination with each of the following personality factors: exhibition, autonomy, succorance, abasement, nurturance, and heterosexuality were evident. Dyads were also found which combined the attitude score on the SAQ with each of the following biographical information factors: marital status, spouse's occupational status, college degree earned, choice of grade level to teach, experience teaching EMR children, total years teaching experience, other occupational experience, and relationship to MR other than teaching.

Dyadic factors which discriminated between the groups of teachers on personality variables were discovered. The personality variables of succorance and heterosexuality combined with each other and separately with the following personality variables: deference, affiliation, dominance, abasement, and endurance. In addition, heterosexuality combined with each of the variables of autonomy and nurturance, whereas succorance combined with achievement. The personality variable of nurturance also combined with each of the variables of deference and abasement.

Dyads which discriminated between the groups of teachers on personality variables in combination with variables on biographical data were found. The personality variables of heterosexuality and succorance each combined with each of the following biographical information factors: number of children at home, total years teaching experience, teacher preparation hours outside the classroom, and other occupational experience. In addition, heterosexuality combined with each of the variables of choice of type of child to teach and experience teaching EMR children, whereas succorance combined with years teaching TMR children. The factors of nurturance and abasement each combined with each of the factors of total years teaching experience and teacher preparation hours outside the class. Nurturance also combined with other occupational experience in discriminating between the groups of teachers. The personality variables of deference and affiliation each combined with total years teaching experience. The variables of intraception and exhibition each combined with relationship to MR other than teaching, and the variable of change combined with other occupational experience.

SELF HELP

Dyads which discriminated between the groups of teachers on biographical information variables were also present. The variable relationship to MR other than teaching combined with the variable choice of occupation. The variable teacher preparation hours outside the classroom combined with other occupational experience.

Eighty-four triads discriminated between the groups of teachers. Only the results of the best six triads determined by greater differences between the groups are summarized here. Triads which discriminated between the groups of teachers on an attitude score, a personality factor, and a factor concerning biographical information were found. The attitude score on the MTAI combined with heterosexuality and experience teaching EMR children as well as with deference and choice of occupation. The attitude score on the SAQ combined with intraception and choice of type of child to teach. One triad was found which discriminated between the teachers on the MTAI score and two factors concerning biographical data. The MTAI score combined with experience teaching EMR children and college degree earned.

Triads which discriminated between the teachers on two personality factors and one factor concerning biographical data were discovered. The personality factors of deference and succorance combined with experience teaching EMR children, whereas the personality factors of order and heterosexuality combined with other activities and interests.

RESULTS: SELF HELP SCORE COMPARISONS

The sample of teachers selected on the basis of pupil gain on Self Help from CL1 to CL2 was composed of thirty-nine teachers of TMR children. Only those teachers who had administered CLs to the same children in the fall of 1965 and the fall of 1966 were included in the sample. A class mean percentage gain score was computed on pupil gain in Self Help for each of the thirty-nine teachers. The class means were then ranked from the highest to the lowest mean gain class. Since the group differences program required an equal number in each group for the comparison process, sixteen teachers were selected from each extreme of the class mean distribution. Therefore, thirty-two teachers were included in the group difference sample: sixteen high mean percentage gain class teachers and sixteen low mean percentage gain class teachers. The seven teachers whose class means clustered around the median of the distribution were eliminated to maintain greater difference between the two teacher groups.

The sample of teachers selected on the basis of pupil gain on Self Help from CL2 to CL3 was composed of fifty-nine teachers of TMR children. Only those teachers who had administered CLs to the same children in the fall of 1966 and the spring of 1967 were included in the sample. A class mean percentage gain score was computed on pupil gain in Self Help for each of the fifty-nine teachers. The class means were ranked from the highest mean gain class to the lowest mean gain class and twenty-four teachers were selected from each extreme of the class mean distribution. Therefore, forty-eight teachers were included in the group differences sample: twenty-four high mean percentage gain class teachers and twenty-four low mean percentage gain class teachers. The eleven teachers whose class means clustered around the median of the distribution were eliminated to maintain greater difference between the two teacher groups.

The sample of teachers selected on the basis of pupil gain on Self Help from CL1 to CL3 was composed of thirty-three teachers of TMR children. Only those teachers who had administered CLs to the same children in the fall of 1965 and the spring of 1967 were included in the sample. A class mean percentage gain score was computed on pupil gain in Self Help for each of the thirty-three teachers. The class means were ranked from the highest to the lowest mean gain class and fourteen teachers were selected from each extreme of the class mean distribution. Therefore, twenty-eight teachers were included in the group differences sample: fourteen high mean gain teachers and fourteen low mean percentage gain teachers. The five teachers whose class means clustered around the median of the distribution were eliminated to maintain greater difference between the two teacher groups.

The procedure followed in the group differences program for Self Help is illustrated by Figure 8. A pool of teacher variables consisted of information on teacher attitudes, personality, and biographical data. The Self Help mean percentage gain on the CL was computed in all the classes from CL1 to CL2, CL2 to CL3, and CL1 to CL3. As described above, two teacher groups were established on the basis of either a high Self Help mean percentage gain class or a low mean percentage gain class from CL1 to CL2; similarly, two teacher groups were also established for each of CL2 to CL3.

Once the teacher groups were established, the Computer Search for Group Differences program was used to select from the pool of teacher variables single factors, dyadic factors, and triadic factors which discriminated between the two groups. Whenever single factors, dyadic factors, and triadic factors were found to discriminate between the two teacher groups involved in the CL1 to CL2 administrations, the same factors were examined for the teacher groups involved in the CL2 to CL3 administrations. Only the factors which discriminated between the teacher groups established from pupil scores on both CL1 to CL2 and CL2 to CL3 were selected as having a close relationship to growth in the Self Help aspect of social competency.

Since the pupil gain scores on Self Help from CL1 to CL3 covered a period of one and one-half years, the Self Help scores from CL1 to CL3 were considered the most stable of all the CL administrations. Therefore, a separate group differences analysis was made of the teacher groups established on the basis of the Self Help class mean percentage gain scores from CL1 to CL3. The single, dyadic and triadic factors which discriminated between the two teacher groups were also hypothesized as having a significant relationship to growth in the Self Help aspect of social competency.

Single Factor Results

Table 42 lists the single factors which discriminated between the high mean gain teachers and low mean gain teachers in the groups established on the basis of pupil Self Help gain scores from CL1 to CL2.

SELECTION OF TEACHER FACTORS RELATING TO PUPIL GROWTH ON SELF HELP FOR THE CAIN LEVINE.

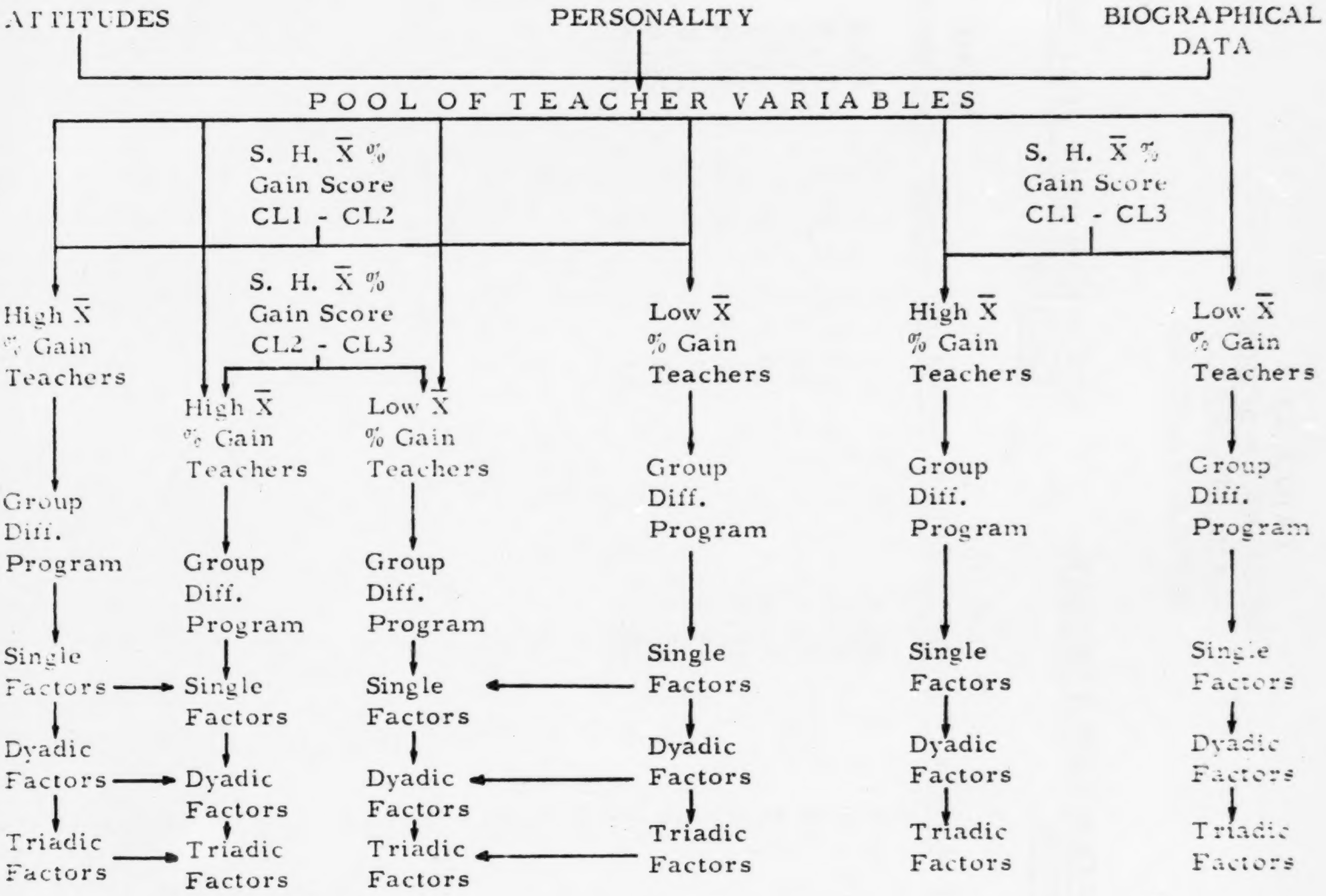
ATTITUDES
PERSONALITY
BIOGRAPHICAL DATA
POOL OF TEACHER VARIABLES
S. H. $\bar{X}$ % Gain Score CL1 - CL2
S. H. $\bar{X}$ % Gain Score CL1 - CL3
S. H. $\bar{X}$ % Gain Score CL2 - CL3
High $\bar{X}$ % Gain Teachers
Low $\bar{X}$ % Gain Teachers
Group Diff. Program
Single Factors
Dyadic Factors
Triadic Factors

Figure 8:

TABLE 42
SELF HELP SCORE
CAIN LEVINE 1-2
SINGLE FACTORS

HIGH MEAN GAIN TEACHER FACTORS			LOW MEAN GAIN TEACHER FACTORS		
Factors	Levels	% Diff. for High Mean Tchrs.	Factors	Levels	% Diff. for Low Mean Tchrs.
17	2	37.5	5	2	50.0
28	1	37.5	16	1	31.3
5	3	31.3	17	1	31.3
6	3	31.3	28	2	31.3
16	2	31.3	6	2	25.0
13	2	25.0	13	3	25.0
18	1	25.0	18	2	25.0
35	1	25.0	35	2	25.0

The left side of Table 42 lists the factors and levels which discriminated between the two teacher groups in favor of the group of teachers whose students showed a high mean percentage gain on Self Help from CL1 to CL2. The first factor is listed as factor 17 and the level represented is level 2. The reader is referred to Table 9 which reveals that factor 17 at level 2 refers to over 10 hours per week of teachers' preparation outside the classroom. The column headed % Difference for High Mean Teachers refers to the difference between the percentage of high mean gain teachers and the percentage of low mean gain teachers who showed the factor and level in question with the difference in favor of the high mean teachers. The factors which showed the greatest difference were the most discriminating factors between the two teacher groups.

The right side of Table 42 lists the factors and levels which discriminated between the two teacher groups in favor of the teachers whose students showed a low mean gain on Self Help from CL1 to CL2. The percentage difference between the high mean gain group of teachers and the low mean group of teachers always favored the low mean group of teachers. The Table 42 factors and levels were all suggested as possible discriminators between the teachers whose students showed high mean gain on Self Help from CL2 to CL3 and the teachers whose students showed low mean gain on Self Help from CL2 to CL3.

Table 43 lists the single factors and levels which discriminated between the high mean gain teacher groups. Table 9 reveals that factor 35 at level 1 refers to scores above the median on heterosexuality. The percentages for the high mean gain teachers and the low mean gain teachers with the difference between the percentages for the groups from CL1 to CL2 and CL2 to CL3 are also listed in Table 43.

TABLE 43
SELF HELP
CAIN LEVINE 1-2, 2-3
SINGLE FACTORS

(A) HIGH MEAN GAIN TEACHER FACTORS

		TEACHERS CL1 TO CL2			TEACHERS CL2 TO CL3		
Factor	Level	% Hi $\overline{X}$ Teachers	% Lo $\overline{X}$ Teachers	Percent Difference	% Hi $\overline{X}$ Teachers	% Lo $\overline{X}$ Teachers	Percent Difference
35	1	62.5	37.5	25.0	70.8	20.8	50.0

(B) LOW MEAN GAIN TEACHER FACTORS

Factor	Level	% Hi $\overline{X}$ Teachers	% Lo $\overline{X}$ Teachers	Percent Difference	% Hi $\overline{X}$ Teachers	% Lo $\overline{X}$ Teachers	Percent Difference
35	2	37.5	62.5	25.0	29.2	79.2	50.0

Table 43 also lists factor 35, level 2 as the only factor and level which favored the low mean gain teacher groups. Table 9 reveals that factor 35, level 2 refers to scores below the median on heterosexuality. The percentages of the teachers in each group who showed factor 35 at level 2 as well as the difference between the percentages are also given.

Table 44 lists the single factors and levels which discriminated between the high mean gain teachers and the low mean gain teachers in the groups based on pupil Self Help gain from CL1 to CL3. The upper portion of Table 44 lists the single factors and levels which discriminated between the two teacher groups in favor of the high mean gain teachers. The following factors favored the high mean gain teachers:

(1) scores above the median on heterosexuality

(2) a nonprofessional spouse;

(3) a non-teaching spouse;

(4) scores above the median on affiliation;

(5) scores above the median on the SAQ.

The lower portion of Table 44 lists the single factors and levels which discriminated between the two teacher groups in favor of the low mean gain teachers. The following single factors favored the low mean gain teachers:

(1) scores below the median on heterosexuality;

(2) less than ten hours per week teacher preparation hours outside the classroom;

(3) no spouse;

(4) one or two years teaching normal children;

(5) scores below the median on affiliation;

(6) scores below the median on the SAQ.

TABLE 44
SELF HELP
CAIN LEVINE 1-3
SINGLE FACTORS

(A) HIGH MEAN GAIN TEACHER FACTORS

Factor	Level	% High Mean Teachers	% Low Mean Teachers	Percent Difference
35	1	78.6	35.7	42.9
3	2	50.0	14.3	35.7
4	2	71.4	42.9	28.6
27	1	64.3	35.7	28.6
37	1	64.3	35.7	28.6

(B) LOW MEAN GAIN TEACHER FACTORS

35	2	21.4	64.3	42.9
17	1	28.6	64.3	35.7
3	3	14.3	42.9	28.6
15	2	14.3	42.9	28.6
27	2	35.7	64.3	28.6
37	2	35.7	64.3	28.6

Dyadic Factor Results

Table 45 presents the combinations of dyadic factors and levels which discriminated between the high mean gain teachers and the low mean gain teachers in the groups based on pupil Self Help gain from CL1 to CL2. The left side of Table 45 lists the factors and levels which favored the high mean teacher group, whereas the right side of Table 45 lists those that favored the low mean teacher group.

The first dyad on Table 45 is composed of factors 2 and 35. The levels for these two factors are 2 and 1. The first 2 refers to level 2 under factor 2 and the 1 refers to level 1 under factor 35. The reader is referred to Table 9 which reveals that factor 2 at level 2 refers to being married and factor 35 at level 1 refers to scores above the median on heterosexuality. The column headed % Difference for High Mean Teachers refers to the difference between the percentage of high mean teachers and the percentage of low mean teachers who showed the two factors at the two levels in question. Therefore, when the high mean gain group and the low mean gain group were examined with regard to factor 2 at level 2 and factor 35 at level 1, it was found that after subtracting the percentage of low mean gain teachers from the percentage of high mean gain teachers, a difference of 37.5 percent remained in favor of the high mean gain teachers.

The remaining factors and levels on Table 45 can be examined in the above fashion. The factors and levels on the right side of Table 45 refer to those which favored the low mean gain group over the high mean gain group. Likewise, the column headed % Difference for Low Mean Teachers refers to the percentage which remained after the subtraction of the percentage of high mean gain teachers who showed dyads in question from the percentage of low mean gain teachers. The results always favored the low mean gain teachers.

TABLE 45
SELF HELP
CAIN LEVINE 1-2
DYADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS			LOW MEAN GAIN TEACHER FACTORS		
Factors	Levels	% Difference for High $\overline{X}$ Teachers	Factors	Levels	% Diff. for Low $\overline{X}$ Teachers
2,35	2,1	37.5	5,16	2,1	43.8
5,14	3,2	37.5	5,33	2,1	43.8
16,28	2,1	37.5	17,28	1,2	43.8
17,18	2,1	37.5	5,18	2,2	37.5
17,35	2,1	37.5	5,35	2,2	37.5
28,35	1,1	37.5	6,33	2,1	37.5
5,6	3,3	31.3	17,33	1,1	37.5
7,17	2,2	31.3	22,34	1,2	37.5
7,35	2,1	31.3	23,35	2,2	37.5
13,28	2,1	31.3	28,32	2,1	37.5
16,17	2,2	31.3	5,6	2,2	31.3
16,35	2,1	31.3	5,17	2,1	31.3
18,28	1,1	31.3	5,28	2,2	31.3
5,28	3,1	25.0	6,35	2,2	31.3
6,28	3,1	25.0	16,17	1,1	31.3
13,17	2,2	25.0	17,24	1,1	31.3
13,18	2,1	25.0	6,18	2,2	25.0
18,35	1,1	25.0	7,34	3,2	25.0
21,34	1,1	25.0	13,17	3,1	25.0
25,35	1,1	25.0	16,18	1,2	25.0
			16,28	2,1	25.0
			16,35	1,2	25.0
			18,35	2,2	25.0
			32,38	1,1	25.0

The Table 45 factors and levels were all suggested as possible discriminators between the teachers whose students showed high mean gain on Self Help from CL2 to CL3 and the teachers whose students showed low mean gain on Self Help from CL2 to CL3.

The upper portion of Table 46 lists the dyads which favored the high mean gain teacher groups. The lower portion of Table 46 lists the dyads which favored the low mean gain teacher groups. On the left side of Table 46 are the percentages of teachers in each group who showed the dyads in question. The teacher groups were based on pupil Self Help gain from CL1 to CL2. The difference between the two percentages is also noted. On the right side of Table 46 are the percentage of teachers in the high mean gain group and the percentage of teachers in the low mean gain group who showed the dyadic factors and levels in question. The teacher groups were based on pupil Self Help gain from CL2 to CL3. The difference between the two percentages is also noted.

The following dyadic factors were found to discriminate in favor of the high mean gain group of teachers:

(1) highest college degree earned a BA or BS degree and scores above the median on heterosexuality;

(2) married and scores above the median on heterosexuality;

(3) years teaching experience below the median and scores above the median on heterosexuality;

(4) scores above the median on intraception and above the median on heterosexuality;

(5) over 10 hours per week teacher preparation outside class and scores on heterosexuality above the median.

TABLE 46
SELF HELP
CAIN LEVINE 1-2, 2-3
DYADIC FACTORS

(A) HIGH MEAN GAIN TEACHER FACTORS

TEACHER CL1 TO CL2					TEACHER CL2 TO CL3		
Factors	level	% High $\bar{X}$ Teachers	% Low $\bar{X}$ Teachers	Percent Difference	% High $\bar{X}$ Teachers	% Low $\bar{X}$ Teachers	Percent Difference
7,35	2,1	43.8	12.5	31.3	58.3	8.3	50.0
2,35	2,1	50.0	12.5	37.5	50.0	12.5	37.5
16,35	2,1	37.5	6.3	31.2	45.8	12.5	33.3
28,35	1,1	43.8	6.3	37.5	37.5	8.3	29.2
17,35	2,1	50.0	12.5	37.5	37.5	12.5	25.0

(B) LOW MEAN GAIN TEACHER FACTORS

Factors	level	% High $\bar{X}$ Teachers	% Low $\bar{X}$ Teachers	Percent Difference	% High $\bar{X}$ Teachers	% Low $\bar{X}$ Teachers	Percent Difference
17,24	1,1	6.3	37.5	31.3	4.2	33.3	29.2
23,35	2,2	6.3	43.8	37.5	12.5	37.5	25.0

The following dyadic factors were found to discriminate in favor of the low mean gain teacher groups:

(1) teachers' preparation outside class less than 10 hours per week and scores above the median on order;

(2) scores below the median on deference and below the median on heterosexuality;

Table 47 lists the dyadic factors which discriminated between the high mean gain teachers and the low mean gain teachers in the groups based on pupil Self Help gain from CL1 to CL3. The left side of Table 47 presents the dyadic factors which favored the high mean gain teachers. The following dyadic factors and levels favored the high mean gain group of teachers:

(1) choice of grade level to teach at preschool through third grade and scores above the median on heterosexuality;

(2) married and scores above the median on heterosexuality;

(3) a nonteaching spouse and scores above the median on heterosexuality;

(4) a nonprofessional spouse and no relationship to MR other than teaching;

(5) a nonprofessional spouse and scores above the median on heterosexuality;

(6) scores above the median on affiliation and above the median on heterosexuality;

(7) scores above the median on heterosexuality and scores above the median on the SAQ;

(8) a nonprofessional spouse and a nonteaching spouse;

(9) a nonprofessional spouse and scores above the median on the SAQ;

TABLE 47
SELF HELP
CAIN LEVINE 1-3
DYADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS

Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Lo $\overline{X}$ Tchrs.	% Diff.
11,35	1,1	78.6	14.3	64.3
2,35	2,1	7.14	14.3	57.1
4,35	2,1	57.1	7.1	50.0
3,20	2,1	50.0	7.1	42.9
3,35	2,1	42.9	0	42.9
27,35	1,1	42.9	0	42.9
35,37	1,1	50.0	7.1	42.9
3,4	2,2	50.0	14.3	35.7
3,37	2,1	42.9	7.1	35.8
26,35	2,1	42.9	7.1	35.8
28,35	1,1	42.9	7.1	35.8
2,6	2,1	35.7	7.1	28.6
2,12	2,1	78.6	50.0	28.6
4,27	2,1	35.7	7.1	28.6
5,31	3,1	35.7	7.1	28.6
7,36	2,1	50.0	21.4	28.6
27,37	1,1	42.9	14.3	28.6
37,38	1,1	35.7	7.1	28.6

LOW MEAN GAIN TEACHER FACTORS

Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Lo $\overline{X}$ Tchrs.	% Diff.
17,35	1,2	0	50.0	50.0
35,38	2,2	0	50.0	50.0
16,31	1,2	0	42.9	42.9
21,35	1,2	0	42.9	42.9
10,35	2,2	0	35.7	35.7
24,35	2,2	0	35.7	35.7
3,27	3,2	0	28.6	28.6
3,37	3,2	7.1	35.7	28.6
15,27	2,2	7.1	35.7	28.6
17,27	1,2	7.1	35.7	28.6
22,26	2,1	7.1	35.7	28.6
26,32	1,1	7.1	35.7	28.6
27,35	2,2	0	28.6	28.6
27,37	2,2	14.3	42.9	28.6
35,37	2,2	7.1	35.7	28.6
36,37	1,2	7.1	35.7	28.6

(10) scores below the median on autonomy and above the median on heterosexuality;

(11) scores above the median on intraception and above the median on heterosexuality;

(12) married and no children living at home;

(13) married and choice of type of child to teach a TMR child;

(14) a nonteaching spouse and scores above the median on affiliation;

(15) three or more children in the family and scores above the median on abasement;

(16) highest degree earned a BS or BA degree and scores above the median on aggression;

(17) scores above the median on affiliation and above the median on the SAQ;

(18) scores above the median on the SAQ and above the median on age.

The following dyadic factors and levels favored the low mean gain group of teachers:

(1) less than ten hours per week of teacher preparation outside the classroom and scores below the median on heterosexuality;

(2) scores below the median on heterosexuality and below the median on age;

(3) total years teaching experience above the median and scores below the median on abasement;

(4) scores above the median on the MTAI and below the median on heterosexuality;

(5) choice of occupation a regular education teacher and scores below the median on heterosexuality;

(6) scores below the median on order and below the median on heterosexuality;

(7) no spouse and scores below the median on affiliation;

(8) no spouse and scores below the median on the SAQ;

(9) one or two years teaching normal children and scores below the median on affiliation;

(10) less than ten hours per week of teacher preparation outside the classroom and scores below the median on affiliation;

(11) scores below the median on achievement and above the median on autonomy;

(12) scores above the median on autonomy and above the median on nurturance;

(13) scores below the median on affiliation and below the median on heterosexuality;

(14) scores below the median on affiliation and below the median on the SAQ;

(15) scores below the median on heterosexuality and below the median on the SAQ;

(16) scores above the median on aggression and below the median on the SAQ.

Triadic Factor Results

Table 48 lists the triadic factors and levels which discriminated between the high mean gain teachers and the low mean gain teachers in the groups based on pupil Self Help gain from CL1 to CL2. The left side of Table 48 lists the triadic factors and levels which favored the high mean gain group of teachers, whereas the right side of Table 48 lists the factors and levels which favored the low mean gain teacher group.

TABLE 48
SELF HELP
CAIN LEVINE 1-2
TRIADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS

Factors	Levels	% Diff. for High $\overline{X}$ Tchrs.
21, 31, 35	1, 2, 1	56.3
12, 22, 35	1, 2, 1	50.0
17, 31, 35	2, 2, 1	50.0
19, 21, 31	2, 1, 2	50.0
11, 24, 35	1, 2, 1	43.8
12, 17, 35	1, 2, 1	43.8
12, 18, 35	1, 1, 1	43.8
16, 29, 35	2, 2, 1	43.8
17, 21, 31	2, 1, 2	43.8
17, 21, 35	2, 1, 1	43.8
17, 26, 31	2, 1, 2	43.8
17, 26, 35	2, 1, 1	43.8
17, 29, 35	2, 2, 1	43.8
22, 31, 35	2, 2, 1	43.8
24, 29, 35	2, 2, 1	43.8
24, 31, 35	2, 2, 1	43.8
24, 31, 35	2, 2, 1	43.8
2, 17, 30	2, 2, 1	37.5
2, 17, 35	2, 2, 1	37.5
7, 25, 31	2, 1, 2	37.5
7, 26, 31	2, 1, 2	37.5
12, 22, 35	1, 2, 1	37.5
16, 17, 31	2, 2, 2	37.5
16, 17, 35	2, 2, 1	37.5
16, 21, 31	2, 1, 2	37.5
16, 21, 36	2, 1, 2	37.5
16, 31, 35	2, 2, 1	37.5
17, 21, 26	2, 1, 1	37.5
17, 22, 31	2, 2, 2	37.5
17, 22, 35	2, 2, 1	37.5
17, 26, 29	2, 1, 2	37.5
17, 29, 31	2, 2, 2	37.5
19, 22, 35	2, 2, 1	37.5

LOW MEAN GAIN TEACHER FACTORS

Factors	Levels	% Diff. for Low $\overline{X}$ Tchrs.
31, 34, 35	1, 1, 2	56.3
31, 35, 36	1, 2, 1	50.0
16, 21, 24	1, 2, 1	50.0
26, 30, 35	2, 2, 2	50.0
31, 34, 36	1, 1, 1	50.0
34, 35, 36	1, 2, 1	50.0
16, 20, 25	1, 1, 2	43.8
16, 24, 35	1, 1, 2	43.8
16, 26, 35	1, 2, 2	43.8
21, 31, 35	2, 1, 2	43.8
24, 26, 31	1, 2, 1	43.8
24, 26, 35	1, 2, 2	43.8
26, 31, 35	2, 1, 2	43.8
2, 35, 38	2, 2, 2	37.5
5, 6, 35	2, 2, 2	37.5
13, 15, 22	1, 2, 1	37.5
14, 16, 24	1, 1, 1	37.5
15, 20, 21	2, 1, 2	37.5
15, 24, 35	3, 1, 2	37.5
16, 21, 31	1, 2, 1	37.5
16, 21, 35	1, 2, 2	37.5
16, 21, 36	1, 2, 1	37.5
16, 24, 26	1, 1, 2	37.5
16, 24, 31	1, 1, 1	37.5
16, 24, 36	1, 1, 1	37.5
16, 26, 30	1, 2, 2	37.5
16, 26, 31	1, 2, 1	37.5
16, 30, 35	1, 2, 2	37.5
16, 31, 35	1, 1, 2	37.5
16, 35, 36	1, 2, 1	37.5
21, 24, 26	2, 1, 2	37.5
21, 24, 31	2, 1, 1	37.5
21, 24, 35	2, 1, 2	37.5

TABLE 48
CON'T.
SELF HELP
CAIN LEVINE 1-2
TRIADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS

Factors	Levels	% Diff. for High $\overline{X}$ Tchrs.
21, 22, 31	1, 2, 2	37.5
21, 22, 35	1, 2, 1	37.5
21, 24, 35	1, 2, 1	37.5
21, 26, 31	1, 1, 2	37.5
21, 26, 35	1, 1, 1	37.5
21, 29, 31	1, 2, 2	37.5
22, 24, 35	2, 2, 1	37.5
22, 26, 35	2, 1, 2	37.5
22, 29, 35	2, 2, 1	37.5
24, 26, 35	2, 1, 1	37.5
25, 26, 31	1, 1, 2	37.5
2, 7, 35	2, 2, 1	31.3
2, 16, 28	2, 2, 1	31.3
2, 16, 35	2, 2, 1	31.3
5, 12, 25	4, 1, 1	31.3
7, 8, 35	2, 1, 1	31.3
7, 17, 35	2, 2, 1	31.3
7, 28, 35	2, 1, 1	31.3
22, 26, 37	2, 1, 1	31.3
24, 30, 35	2, 1, 1	31.3
25, 26, 35	1, 1, 1	31.3
2, 7, 16	2, 2, 2	25.0
2, 28, 35	2, 1, 1	25.0
3, 26, 32	2, 1, 2	25.0
3, 31, 33	2, 2, 2	25.0
6, 25, 26	3, 1, 1	25.0
7, 16, 35	2, 2, 1	25.0
7, 17, 32	2, 2, 2	25.0
13, 29, 32	2, 1, 2	25.0
16, 28, 35	2, 1, 1	25.0
16, 30, 31	2, 1, 2	25.0

LOW MEAN GAIN TEACHER FACTORS

Factors	Levels	% Diff. for Low $\overline{X}$ Tchrs.
21, 24, 36	2, 1, 1	37.5
21, 26, 35	2, 2, 2	37.5
21, 30, 35	2, 2, 2	37.5
21, 31, 34	2, 1, 1	37.5
21, 34, 335	2, 1, 2	37.5
21, 35, 36	2, 2, 1	37.5
24, 26, 30	1, 2, 2	37.5
24, 31, 34	1, 1, 1	37.5
24, 31, 36	1, 1, 1	37.5
24, 35, 36	1, 2, 1	37.5
26, 30, 31	2, 2, 1	37.5
26, 35, 36	2, 2, 1	37.5
28, 35, 36	1, 2, 1	37.5
30, 31, 34	2, 1, 1	37.5
30, 34, 35	2, 1, 2	37.5
30, 35, 36	2, 2, 1	37.5
2, 33, 35	2, 1, 2	31.3
5, 6, 26	2, 2, 2	31.3
5, 23, 36	2, 2, 1	31.3
17, 28, 33	1, 2, 1	31.3
20, 21, 25	1, 2, 2	31.3
22, 28, 34	1, 2, 2	31.3
23, 24, 35	2, 1, 2	31.3
2, 24, 33	2, 1, 1	25.0
5, 17, 28	2, 1, 2	25.0
6, 32, 36	2, 1, 1	25.0
10, 12, 28	1, 1, 2	25.0
13, 20, 38	3, 1, 1	25.0
14, 16, 35	1, 1, 2	25.0
16, 17, 28	1, 1, 2	25.0
17, 20, 33	1, 1, 1	25.0

TABLE 48
CON'T.
SELF HELP
CAIN LEVINE 1-2
TRIADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS

Factors	Levels	% Diff. for High $\overline{X}$ Tchrs.
18, 31, 35	1, 2, 1	25.0
22, 24, 35	2, 2, 1	25.0
28, 31, 33	1, 2, 2	25.0

LOW MEAN GAIN TEACHER FACTORS

Factors	Levels	% Diff. for Low $\overline{X}$ Tchrs.
17, 27, 33	1, 1, 1	25.0
22, 33, 34	1, 1, 2	25.0
28, 29, 37	1, 2, 1	25.0
28, 32, 34	2, 1, 2	25.0

The first triad noted for the high mean gain teachers is composed of the factors 21, 31, and 35. The levels noted for the three factors are 1, 2, and 1. The first 1 refers to level 1 under factor 21; the two refers to level 2 under factor 31; and the second 1 refers to level 1 under factor 35. The reader is referred to Table 9 which reveals that factor 21 at level 1 signifies score above the median on the MTAI, factor 31 at level 2 refers to scores below the median on abasement, and factor 35 level 1 refers to scores above the median on heterosexuality. By consulting Table 9, the reader can determine the other triads which are listed on Table 48.

The column headed % Difference for High Mean Teachers refers to the difference between the percentage of high mean teachers and the percentage of low mean teachers who showed the triad in question with the difference in favor of the high mean gain teachers. The column headed by % Difference for Low Mean Teachers refers to the difference between the two teacher groups in favor of the low mean gain teachers.

The Table 48 triads were all suggested as possible discriminators between the teachers whose students showed high mean gain on Self Help from CL2 to CL3 and the teachers whose students showed low mean gain on Self Help from CL2 to CL3. Table 49 lists the triads which discriminated between the high mean gain teachers and the low mean gain teachers in the groups based on pupil gain over both CL1 to CL2 and CL2 to CL3.

The upper portion of Table 49 lists the triadic factors and levels which favored the high mean gain teachers. The lower portion of Table 49 lists the triads which favored the low mean gain teacher groups. On the right side of Table 49 are the percentages of teachers in each group who showed the triads in question. The teacher groups were based on pupil Self Help gain from CL1 to CL2. The difference between the two percentages of teachers in the groups selected on the basis of pupil Self Help gain from CL2 to CL3 is also noted.

TABLE 49
SELF HELP
CAIN LEVINE 1-2, 2-3
TRIADIC FACTORS

(A) HIGH MEAN GAIN TEACHER FACTORS

		TEACHERS CL1 TO CL2			TEACHERS CL2 TO CL3		
Factors	Levels	% High $\bar{X}$ Teachers	% Low $\bar{X}$ Teachers	Percent Difference	% High $\bar{X}$ Teachers	% Low $\bar{X}$ Teachers	Percent Difference
2, 7, 35	2, 2, 1	31.3	0	31.3	37.5	8.3	29.2
7, 16, 35	2, 2, 1	31.3	6.3	25.0	41.7	8.3	33.4
7, 17, 35	2, 2, 1	37.5	6.3	31.2	33.8	8.3	25.0
7, 28, 35	2, 1, 1	31.3	0	31.3	29.2	4.2	25.0

(B) LOW MEAN GAIN TEACHER FACTORS

23, 24, 35	2, 1, 2	0	31.3	31.3	8.3	33.3	25.0

The following triadic factors and levels favored the high mean gain groups of teachers:

(1) married, highest degree earned a BA or BS degree, and scores above the median on heterosexuality;

(2) highest degree earned a BA or BS degree, total years teaching experience below the median, and scores above the median on heterosexuality;

(3) highest degree earned a BA or BS degree, over ten hours per week of teacher preparation outside the classroom, and scores above the median on heterosexuality;

(4) highest degree earned a BA or BS degree, scores above the median on intraception, and scores above the median on heterosexuality.

The following triad favored the low mean gain groups of teachers:

(1) scores below the median on deference, scores above the median on order and scores below the median on heterosexuality.

Table 50 lists the triadic factors and levels which discriminated between the high mean gain teachers and the low mean gain teachers in the groups based on pupil Self Help gain from CL1 to CL3. The left side of Table 50 lists the triadic factors and levels which favored the high mean gain teachers. The right side of Table 50 lists the triads which favored the low mean gain teachers.

TABLE 50
SELF HELP
CAIN LEVINE 1-3
TRIADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS

Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Lo $\overline{X}$ Tchrs.	% Diff.
11, 12, 35	1, 1, 1	64.3	7.1	57.2
2, 4, 35	2, 2, 1	57.1	7.1	50.0
2, 7, 35	2, 2, 1	57.1	7.1	50.0
2, 9, 35	2, 1, 1	50.0	0	50.0
2, 11, 35	2, 1, 1	57.1	7.1	50.0
2, 12, 35	2, 1, 1	64.3	14.3	50.0
2, 35, 37	2, 1, 1	50.0	0	50.0
3, 7, 20	2, 2, 1	50.0	0	50.0
7, 12, 35	2, 1, 1	57.1	7.1	50.0
7, 35, 37	2, 1, 1	50.0	0	50.0
9, 11, 35	1, 1, 1	50.0	0	50.0
2, 3, 7	2, 2, 2	50.0	7.1	42.9
2, 3, 20	2, 2, 1	50.0	7.1	42.9
2, 3, 35	2, 2, 1	42.9	0	42.9
2, 7, 37	2, 2, 1	57.1	14.3	42.8
2, 20, 35	2, 1, 1	57.1	14.3	42.8
2, 33, 36	2, 2, 1	50.0	7.1	42.9

LOW MEAN GAIN TEACHER FACTORS

Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Lo $\overline{X}$ Tchrs.	% Diff.
6, 24, 35	1, 2, 2	0	35.7	35.7
12, 35, 38	1, 2, 2	0	35.7	35.7
16, 31, 32	1, 2, 1	0	35.7	35.7
16, 31, 36	1, 2, 1	0	35.7	35.7
17, 31, 35	1, 2, 1	0	35.7	35.7
17, 32, 35	1, 1, 2	0	35.7	35.7
17, 35, 36	1, 2, 1	0	35.7	35.7
17, 35, 38	1, 2, 2	0	35.7	35.7
21, 23, 35	1, 1, 2	0	35.7	35.7
21, 24, 35	1, 2, 2	0	35.7	35.7
21, 35, 38	1, 2, 2	0	35.7	35.7
24, 35, 38	2, 2, 2	0	35.7	35.7
3, 16, 27	3, 1, 2	0	28.6	28.6
3, 16, 31	3, 1, 2	0	28.6	28.6
3, 16, 36	3, 1, 1	0	28.6	28.6
3, 16, 37	3, 1, 2	0	28.6	28.6
3, 26, 31	3, 1, 2	0	28.6	28.6

TABLE 50
CON'T.
SELF HELP
CAIN LEVINE 1-3
TRIADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS

Factors	Levels	% Hi $\bar{X}$ Tchrs.	% Lo $\bar{X}$ Tchrs.	% Diff.
3, 4, 7	2, 2, 2	50.0	7.1	42.9
3, 4, 20	2, 2, 1	50.0	7.1	42.9
3, 4, 35	2, 2, 1	42.9	0	42.9
3, 7, 35	2, 2, 1	42.9	0	42.9
3, 7, 37	2, 2, 1	42.9	0	42.9
3, 12, 20	2, 1, 1	42.9	0	42.9
3, 20, 35	2, 1, 1	42.9	0	42.9
4, 11, 35	2, 1, 1	42.9	0	42.9
4, 12, 20	2, 1, 1	57.1	14.3	42.8
4, 12, 35	2, 1, 1	50.0	7.1	42.9
4, 20, 33	2, 1, 2	50.0	7.1	42.9
4, 20, 35	2, 1, 1	50.0	7.1	42.9
7, 11, 35	2, 1, 1	50.0	7.1	42.9
7, 12, 37	2, 1, 1	50.0	7.1	42.9
7, 20, 35	2, 1, 1	50.0	7.1	42.9
11, 27, 35	1, 1, 1	42.9	0	42.9
12, 26, 35	1, 2, 1	42.9	0	42.9

LOW MEAN GAIN TEACHER FACTORS

Factors	Levels	% Hi $\bar{X}$ Tchrs.	% Lo $\bar{X}$ Tchrs.	% Diff.
10, 16, 22	2, 1, 2	0	28.6	28.6
10, 17, 35	2, 1, 2	0	28.6	28.6
10, 17, 36	2, 1, 1	0	28.6	28.6
10, 31, 35	2, 2, 2	0	28.6	28.6
10, 35, 36	2, 2, 1	0	28.6	28.6
10, 35, 38	2, 2, 2	0	28.6	28.6
11, 25, 34	1, 1, 1	7.1	35.7	28.6
15, 21, 32	2, 1, 1	0	28.6	28.6
15, 22, 27	2, 2, 2	0	28.6	28.6
15, 22, 32	2, 2, 1	0	28.6	28.6
15, 27, 32	2, 2, 1	0	28.6	28.6
16, 17, 31	1, 1, 2	0	28.6	28.6
16, 17, 35	1, 1, 2	0	28.6	28.6
16, 17, 36	1, 1, 1	7.1	35.7	28.6
16, 17, 38	1, 1, 2	0	28.6	28.6
16, 22, 31	1, 2, 2	0	28.6	28.6
16, 22, 36	1, 2, 1	0	28.6	28.6

TABLE 50
CON'T.
SELF HELP
CAIN LEVINE 1-3
TRIADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS

Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Lo $\overline{X}$ Tchrs.	% Diff.
12,27,35	1,1,1	42.9	0	42.9
12,28,35	1,1,1	42.9	0	42.9
2,3,4	2,2,2	50.0	14.3	35.7
2,3,12	2,2,1	42.9	7.1	35.8
2,3,37	2,2,1	42.9	7.1	35.8
2,4,12	2,2,1	64.3	28.6	35.7
2,4,20	2,2,1	64.3	28.6	35.7
2,6,35	2,1,1	35.7	0	35.7
2,7,15	2,2,3	35.7	0	35.7
2,7,20	2,2,1	57.1	21.4	35.7
2,7,27	2,2,1	35.7	0	35.7
2,12,27	2,1,1	50.0	14.3	35.7
2,12,37	2,1,1	50.0	14.3	35.7
2,23,35	2,1,1	42.9	7.1	35.8
2,26,35	2,2,1	35.7	0	35.7
2,27,35	2,1,1	35.7	0	35.7
2,28,35	2,1,1	35.7	0	35.7

LOW MEAN GAIN TEACHER FACTORS

Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Lo $\overline{X}$ Tchrs.	% Diff.
16,23,38	1,2,2	0	28.6	28.6
16,26,31	1,1,2	0	28.6	28.6
16,27,31	1,2,2	0	28.6	28.6
16,31,37	1,2,2	0	28.6	28.6
16,36,38	1,1,2	0	28.6	28.6
17,20,37	1,1,1	7.1	35.7	28.6
17,21,35	1,1,2	0	28.6	28.6
17,22,35	1,2,2	0	28.6	28.6
17,25,38	1,2,2	0	28.6	28.6
17,31,35	1,2,2	0	28.6	28.6
17,36,38	1,1,2	7.1	35.7	28.6
21,22,26	1,2,1	0	28.6	28.6
21,24,38	1,2,2	7.1	35.7	28.6
21,26,32	1,1,1	0	28.6	28.6
21,32,35	1,1,2	0	28.6	28.6
21,35,37	1,2,2	0	28.6	28.6
22,26,27	2,1,2	0	28.6	28.6

TABLE 50
CON'T.
SELF HELP
CAIN LEVINE 1-3
TRIADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS

Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Lo $\overline{X}$ Tchrs.	% Diff.
3, 4, 12	2, 2, 1	42.9	7.1	35.8
3, 7, 12	2, 2, 1	42.9	7.1	35.8
3, 12, 35	2, 1, 1	35.7	0	35.7
3, 12, 37	2, 1, 1	35.7	0	35.7
3, 20, 37	2, 1, 1	42.9	7.1	35.8
3, 35, 37	2, 1, 1	35.7	0	35.7
4, 7, 35	2, 2, 1	42.9	7.1	35.8
4, 9, 35	2, 1, 1	35.7	0	35.7
4, 12, 26	2, 1, 2	42.9	7.1	35.8
4, 20, 28	2, 1, 1	42.9	7.1	35.8
4, 26, 35	2, 2, 1	35.7	0	35.7
5, 11, 31	3, 1, 1	35.7	0	35.7
7, 11, 27	2, 1, 1	35.7	0	35.7
7, 12, 26	2, 1, 2	42.9	7.1	35.8
7, 12, 27	2, 1, 1	42.9	7.1	35.8
7, 20, 34	2, 1, 1	42.9	7.1	35.8

LOW MEAN GAIN TEACHER FACTORS

Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Lo $\overline{X}$ Tchrs.	% Diff.
22, 26, 32	2, 1, 1	7.1	35.7	28.6
24, 29, 38	2, 1, 2	7.1	35.7	28.6
24, 35, 37	2, 2, 2	0	28.6	28.6
26, 27, 32	1, 2, 1	0	28.6	28.6
26, 31, 37	1, 2, 2	0	28.6	28.6
31, 32, 36	2, 1, 1	0	28.6	28.6
31, 35, 36	2, 2, 1	0	28.6	28.6
31, 35, 37	2, 2, 2	0	28.6	28.6
31, 35, 38	2, 2, 2	0	28.6	28.6
31, 36, 37	2, 1, 2	0	28.6	28.6
32, 35, 38	1, 2, 2	0	28.6	28.6
35, 36, 38	2, 1, 2	0	28.6	28.6

TABLE 50
CON'T.
SELF HELP
CAIN LEVINE 1-3
TRIADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS

Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Lo $\overline{X}$ Tchrs.	% Diff.
7,20,36	2,1,1	42.9	7.1	35.8
7,20,37	2,1,1	50.0	14.3	35.7
7,27,28	2,1,1	35.7	0	35.7
7,27,35	2,1,1	35.7	0	35.7
7,27,37	2,1,1	35.7	0	35.7
7,33,37	2,1,1	42.9	7.1	35.8
11,20,35	1,1,1	42.9	7.1	35.8
11,35,37	1,1,1	35.7	0	35.7
12,27,37	1,1,1	42.9	7.1	35.8
12,31,38	1,1,1	50.0	14.3	35.7
12,35,37	1,1,1	42.9	7.1	35.8
16,30,37	2,1,1	35.7	0	35.7
20,31,38	1,1,1	50.0	14.3	35.7
20,35,37	1,1,1	42.9	7.1	35.8
24,27,30	1,1,2	35.7	0	35.7
24,29,34	1,1,1	35.7	0	35.7
2,3,38	2,2,1	28.6	0	28.6

LOW MEAN GAIN TEACHER FACTORS

Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Lo $\overline{X}$ Tchrs.	% Diff.

NONE

5

TABLE 50
CON'T.
SELF HELP
CAIN LEVINE 1-3
TRIADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS

Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Lo $\overline{X}$ Tchrs.	% Diff.
2, 4, 6	2, 2, 1	28.6	0	28.6
2, 4, 27	2, 2, 1	35.7	7.1	28.6
2, 4, 28	2, 2, 1	42.9	14.3	28.6
2, 4, 38	2, 2, 1	42.9	14.3	28.6
2, 5, 31	2, 3, 1	35.7	7.1	28.6
2, 6, 7	2, 1, 2	28.6	0	28.6
2, 6, 20	2, 1, 1	35.7	7.1	28.6
2, 7, 12	2, 2, 1	57.1	28.6	28.5
2, 11, 27	2, 1, 1	42.9	14.3	28.6
2, 12, 20	2, 1, 1	64.3	35.7	28.6
2, 12, 26	2, 1, 2	42.9	14.3	28.6
2, 19, 36	2, 1, 1	35.7	7.1	28.6
2, 21, 35	2, 2, 1	35.7	7.1	28.6
2, 22, 30	2, 1, 2	35.7	7.1	28.6
2, 25, 33	2, 2, 2	35.7	7.1	28.6
2, 29, 34	2, 2, 2	35.7	7.1	28.6
2, 31, 35	2, 1, 1	35.7	7.1	28.6
2, 31, 38	2, 1, 1	42.9	14.3	28.6
3, 4, 38	2, 2, 1	28.6	0	28.6

LOW MEAN GAIN TEACHER FACTORS

Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Lo $\overline{X}$ Tchrs.	% Diff.

NONE

TABLE 50
CON'T.
SELF HELP
CAIN LEVINE 1-3
TRIADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS

Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Lo $\overline{X}$ Tchrs.	% Diff.
3, 7, 26	2, 2, 2	35.7	7.1	28.6
3, 7, 31	2, 2, 1	28.6	0	28.6
3, 7, 38	2, 2, 1	28.6	0	28.6
3, 11, 20	2, 1, 1	28.6	0	28.6
3, 11, 35	2, 1, 1	28.6	0	28.6
3, 12, 26	2, 1, 2	35.7	7.1	28.6
3, 12, 31	2, 1, 1	28.6	0	28.6
3, 12, 38	2, 1, 1	28.6	0	28.6
3, 20, 26	2, 1, 2	35.7	7.1	28.6
3, 20, 28	2, 1, 1	28.6	0	28.6
3, 20, 38	2, 1, 1	28.6	0	28.6
3, 23, 25	2, 1, 2	28.6	0	28.6
3, 26, 35	2, 1, 1	28.6	0	28.6
3, 28, 37	2, 1, 1	28.6	0	28.6
3, 31, 38	2, 1, 1	28.6	0	28.6
4, 6, 20	2, 1, 1	28.6	0	28.6
4, 6, 35	2, 1, 1	28.6	0	28.6

LOW MEAN GAIN TEACHER FACTORS

Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Lo $\overline{X}$ Tchrs.	% Diff.

NONE

TABLE 50
CON'T.
SELF HELP
CAIN LEVINE 1-3
TRIADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS

Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Lo $\overline{X}$ Tchrs.	% Diff.
4, 7, 20	2, 2, 1	50.0	21.4	28.6
4, 11, 12	2, 1, 1	50.0	21.4	28.6
4, 11, 20	2, 1, 1	42.9	14.3	28.6
4, 11, 27	2, 1, 1	28.6	0	28.6
4, 11, 38	2, 1, 1	35.7	7.1	28.6
4, 12, 28	2, 1, 1	42.9	14.3	28.6
4, 12, 38	2, 1, 1	42.9	14.3	28.6
4, 20, 38	2, 1, 1	42.9	14.3	28.6
4, 27, 28	2, 1, 1	28.6	0	28.6
4, 28, 35	2, 1, 1	28.6	0	28.6
4, 31, 38	2, 1, 1	42.9	14.3	28.6
5, 12, 31	3, 1, 1	35.7	7.1	28.6
6, 7, 35	1, 2, 1	35.7	7.1	28.6
6, 12, 26	1, 1, 2	28.6	0	28.6
6, 20, 35	1, 1, 1	35.7	7.1	28.6
7, 11, 12	2, 1, 1	50.0	21.4	28.6
7, 12, 20	2, 1, 1	50.0	21.4	28.6
7, 12, 28	2, 1, 1	42.9	14.3	28.6

LOW MEAN GAIN TEACHER FACTORS

Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Lo $\overline{X}$ Tchrs.	% Diff.

NONE

TABLE 50
CON'T.
SELF HELP
CAIN LEVINE 1-3
TRIADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS

Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Lo $\overline{X}$ Tchrs.	% Diff.
7, 15, 22	2, 3, 1	35.7	7.1	28.6
7, 15, 25	2, 3, 2	28.6	0	28.6
7, 20, 26	2, 1, 2	35.7	7.1	28.6
7, 26, 35	2, 2, 1	35.7	7.1	28.6
7, 28, 35	2, 1, 1	35.7	7.1	28.6
7, 28, 37	2, 1, 1	35.7	7.1	28.6
11, 12, 27	1, 1, 1	50.0	21.4	28.6
11, 26, 35	1, 2, 1	35.7	7.1	28.6
11, 28, 35	1, 1, 1	35.7	7.1	28.6
11, 31, 35	1, 1, 1	35.7	7.1	28.6
12, 15, 34	1, 3, 1	35.7	7.1	28.6
12, 19, 26	1, 1, 2	35.7	7.1	28.6
12, 20, 26	1, 1, 2	42.9	14.3	28.6
12, 20, 31	1, 1, 1	50.0	21.4	28.6
12, 20, 35	1, 1, 1	50.0	21.4	28.6
12, 20, 37	1, 1, 1	50.0	21.4	28.6
12, 20, 38	1, 1, 1	57.1	28.6	28.5
12, 21, 27	1, 2, 1	35.7	7.1	28.6

LOW MEAN GAIN TEACHER FACTORS

Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Lo $\overline{X}$ Tchrs.	% Diff.

NONE

TABLE 50
CON'T.
SELF HELP
CAIN LEVINE 1-3
TRIADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS

Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Lo $\overline{X}$ Tchrs.	% Diff.
12, 24, 29	1, 1, 1	35.7	7.1	28.6
12, 26, 37	1, 2, 1	35.7	7.1	28.6
12, 26, 38	1, 2, 1	28.6	0	28.6
12, 27, 28	1, 1, 1	50.0	21.4	28.6
12, 27, 31	1, 1, 1	35.7	7.1	28.6
12, 27, 38	1, 1, 1	35.7	7.1	28.6
12, 28, 31	1, 1, 1	42.9	14.3	28.6
12, 28, 37	1, 1, 1	42.9	14.3	28.6
12, 31, 35	1, 1, 1	35.7	7.1	28.6
12, 34, 37	1, 1, 1	35.7	7.1	28.6
12, 37, 38	1, 1, 1	35.7	7.1	28.6
14, 16, 35	2, 2, 1	35.7	7.1	28.6
16, 30, 35	2, 1, 1	35.7	7.1	28.6
19, 20, 34	1, 1, 1	35.7	7.1	28.6
19, 25, 34	1, 2, 1	35.7	7.1	28.6
19, 26, 34	1, 2, 1	35.7	7.1	28.6
20, 22, 38	1, 1, 1	35.7	7.1	28.6
20, 26, 35	1, 2, 1	28.6	0	28.6

LOW MEAN GAIN TEACHER FACTORS

Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Lo $\overline{X}$ Tchrs.	% Diff.

NONE

TABLE 50
CON'T.
SELF HELP
CAIN LEVINE 1-3
TRIADIC FACTORS

HIGH MEAN GAIN TEACHER FACTORS

Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Lo $\overline{X}$ Tchrs.	% Diff.
20, 26, 38	1, 2, 1	28.6	0	28.6
20, 27, 38	1, 1, 1	35.7	7.1	28.6
20, 28, 35	1, 1, 1	28.6	0	28.6
20, 37, 38	1, 1, 1	35.7	7.1	28.6
25, 33, 34	2, 2, 1	35.7	7.1	28.6
27, 28, 31	1, 1, 1	35.7	7.1	28.6
27, 28, 35	1, 1, 1	28.6	0	28.6
27, 28, 37	1, 1, 1	35.7	7.1	28.6
28, 35, 37	1, 1, 1	28.6	0	28.6

LOW MEAN GAIN TEACHER FACTORS

Factors	Levels	% Hi $\overline{X}$ Tchrs.	% Lo $\overline{X}$ Tchrs.	% Diff.

NONE

Table 50 lists one hundred and eighty-three triadic factors and levels which discriminated in favor of the high mean gain teachers at over a twenty-five percent difference between the percentage of high mean gain teachers and the percentage of low mean gain teachers. Only the first thirty-six triads which favored the high mean gain teachers at over a forty-two percent difference are listed here. The following triads favored the high mean gain teachers:

(1) choice of grade level to teach at preschool through third grade, choice of type of child to teach a TMR child, and scores above the median on heterosexuality;

(2) married, a nonteaching spouse, and scores above the median on heterosexuality;

(3) married, highest degree earned a BS or BA degree, and scores above the median on heterosexuality;

(4) married, level of student teaching at kindergarten through third grade, and scores above the median on heterosexuality;

(5) married, choice of grade level to teach at preschool through third grade, and scores above the median on heterosexuality;

(6) married, choice of TMR as type of children to teach, and scores above the median on heterosexuality;

(7) married, scores above the median on heterosexuality, and scores above the median on the SAQ;

(8) a nonprofessional spouse, highest degree earned a BS or BA degree, and no relationship to MR other than teaching;

(9) highest degree earned a BS or BA degree, choice of TMR as type of child to teach, and scores above the median on heterosexuality;

(10) highest degree earned a BS or BA degree, scores above the median on heterosexuality, and scores above the median on the SAQ;

(11) level of student teaching at kindergarten through third grade, choice of special education teacher for occupation, and scores above the median on heterosexuality;

(12) married, a nonprofessional spouse, and highest degree earned a BS or BA degree;

(13) married, a nonprofessional spouse, and no relationship to MR other than teaching;

(14) married, a nonprofessional spouse, and scores above the median on heterosexuality;

(15) married, highest degree earned a BS or BA degree, and scores above the median on the SAQ;

(16) married, no relationship to MR other than teaching, and scores above the median on heterosexuality;

(17) married, scores below the median on change, and scores above the median on aggression;

(18) a nonprofessional spouse, a nonteaching spouse, and highest degree earned a BS or BA degree;

(19) a nonprofessional spouse, a nonteaching spouse, and no relationship to MR other than teaching;

(20) a nonprofessional spouse, a nonteaching spouse, and scores above the median on heterosexuality;

(21) a nonprofessional spouse, highest degree earned a BS or BA degree, and scores above the median on heterosexuality;

(22) a nonprofessional spouse, highest degree earned a BS or BA degree, and scores above the median on the SAQ;

(23) a nonprofessional spouse, choice of TMR as type of child to teach, and no relationship to MR other than teaching;

(24) a nonprofessional spouse, no relationship to MR other than teaching, and scores above the median on heterosexuality;

(25) a nonteaching spouse, choice of TMR as type of child to teach and scores below the median on change;

(26) a nonteaching spouse, choice of TMR as type of child to teach, and no relationship to MR other than teaching;

(27) a nonteaching spouse, choice of TMR as type of child to teach, and scores above the median on heterosexuality;

(28) a nonteaching spouse, no relationship to MR other than teaching, and scores below the median on change;

(29) a nonteaching spouse, no relationship to MR other than teaching, and scores above the median on heterosexuality;

(30) highest degree earned a BS or BA degree, choice of grade level to teach at preschool through third grade, and scores above the median on heterosexuality;

(31) highest degree earned a BS or BA degree, choice of TMR as type of child to teach, and scores above the median on the SAQ;

(32) highest degree earned a BS or BA degree, no relationship to MR other than teaching, and scores above the median on heterosexuality;

(33) choice of grade level to teach at preschool through third grade, scores above the median on affiliation, and scores above the median on heterosexuality;

(34) choice of TMR as type of child to teach, scores below the median on autonomy, and scores above the median on heterosexuality;

(35) choice of TMR as type of child to teach, scores above the median on intraception, and scores above the median on heterosexuality;

(36) choice of TMR as type of child to teach, scores above the median on intraception, and scores above the median on heterosexuality.

Thirty-five triads were found to discriminate in favor of the low mean gain teacher group. However, since none of the triads favored the low mean gain teachers at over a forty-two percent difference between the percentage of high mean teachers and the percentage of low mean teachers, none of the triadic factors are listed here. The reader is referred to Table 9 to determine which of the factors or levels are represented by the numbers on the right side of Table 50.

SELF HELP SCORE SUMMARY

This section has described the process whereby groups of teachers were established on the basis of mean pupil Self Help gain on the Cain Levine Social Competency Scale. Two groups of teachers, a high mean Self Help gain group and a low mean Self Help gain group were established for each of three Cain Levine comparisons: CL1 to CL2, CL2 to CL3, and CL1 to CL3 (i.e., first year gain, second year gain, and total gain).

Teacher information concerning attitudes, personality, and biographical data was coded by the investigators and examined by the IBM 360:67 computer to determine if there were differences between the teachers whose students showed high gain on the Self Help subscale of the Cain Levine compared to the teachers whose students showed little or no gain on the Self Help subscale of the Cain Levine.

Single factors, dyadic factors, and triadic factors were all examined. Whenever a difference of twenty-five percent or more occurred between the teacher groups established from class scores on CL1 to CL2 and CL2 to CL3, or the teacher groups established from class scores on CL1 to CL3, the factor or combination of factors which showed the difference was hypothesized as a discriminator between the teacher groups.

Results were presented which listed the single factors, dyadic factors, and triadic factors which discriminated between the teacher groups selected on the basis of Self Help gain from CL1 to CL2, from CL2 to CL3, and from CL1 to CL3. Single factors which discriminated between the groups of teachers on the attitude score on the MTAI, the personality variables of affiliation and heterosexuality, and the biographical information factors of occupational status, years teaching normal children, and teacher preparation hours outside the classroom were found.

Dyadic factors which discriminated between the groups of teachers on the attitude score on the SAQ in combination with each of the following personality factors: heterosexuality, affiliation, and aggression were discovered. A dyad composed of the MTAI score in combination with the personality factor of heterosexuality was also found. Dyads which combined the attitude score on the SAQ with each of the following biographical information variables: spouse's occupational status and age were also revealed.

Dyadic factors which discriminated between the groups of teachers on personality variables were found. The personality variable of heterosexuality combined with each of the following factors: deference, order, autonomy, affiliation, and intraception. The personality variable of autonomy combined with each of the variables of achievement and nurturance.

Dyads which discriminated between the groups of teachers on personality variables in combination with variables on biographical data were evident. The personality variable of heterosexuality combined with each of the following biographical information factors: marital status, spouse's occupational status, college degree earned, choice of occupation, choice of grade level to teach, total years teaching experience, teacher preparation hours outside the classroom, and age. The factor of affiliation combined with each of the following factors: spouse's occupational status, years teaching normal children, and teacher preparation hours outside the classroom. The factor abasement combined with the factor number of children in the family as well as the factor total years of teaching experience. The factor aggression combined with college degree earned, whereas the factor order combined with teacher preparation hours outside the classroom.

Dyads which discriminated between the groups of teachers on biographical information factors were also found. The factor marital status combined with number of children living at home as well as choice of type of child to teach. The factor spouse's occupational status combined with relationship to MR other than teaching.

Two hundred and forty-six triads discriminated between the groups of teachers. Only the results of the best forty-six triads determined by greater differences between the groups are summarized here. Triads which discriminated between the groups of teachers on an attitude score, a personality factor, and factor concerning biographical information were found. The attitude score on the SAQ combined with heterosexuality and with each of the biographical information variables of marital status and college degree earned. Triads which discriminated between the groups of teachers on the attitude score of the SAQ and two factors concerning biographical information were also present. The attitude score on the SAQ along with college degree earned combined with each of the variables marital status, spouse's occupational status, and choice of type of child to teach.

Triads which discriminated between the groups on two personality factors and one biographical information factor were found. The personality variable of heterosexuality along with choice of type of child to teach combined with each of the personality factors of autonomy, affiliation, and intraception. In addition, heterosexuality along with affiliation combined with choice of grade level to teach. The personality variables of change and aggression also combined with marital status to discriminate between the teacher groups.

A number of triads which discriminated between the teachers on one personality factor and two biographical data factors were discovered. The personality factor of heterosexuality along with marital status combined with each of the following biographical information factors: spouse's occupational status, college degree earned, level of student teaching, choice of grade level to teach, choice of type of child to teach, and relationship to MR other than teaching. Heterosexuality also combined with occupational status and each of the following factors: college degree earned, relationship of child to teacher. Heterosexuality combined with college degree earned and each of the factors of choice of grade level to teach, choice of type of child to teach, and relationship to MR other than teaching. Heterosexuality also combined with choice of grade level to teach and each of the variables of level of student teaching and choice of type of child to teach. The personality factor of change combined with spouse's occupational status and relationship to MR other than teaching.

Triads which discriminated between the two teacher groups on three factors concerning biographical information were also found. The factor of spouse's occupational status along with relationship to MR other than teaching combined with each of the following factors: marital status, college degree earned, and choice of type of child to teach. In addition, the factor spouse's occupational choice combined with marital status and college degree earned.

GROUP DIFFERENCES SUMMARY

The group differences program was used to examine a myriad of teacher variables and to choose those variables which had the highest probability of being associated with growth of TMR children in special classes.

A large pool of teacher variables relating to teacher attitude, personality, and biographical information was obtained by administering the MTAI, the SAQ, the EPPS, and the TIF to all the teachers of TMR children involved in the study.

Pupil growth was determined by administering the CL to the TMR students in the study. The CL was composed of a total score and four subscale scores pertaining to communication, social skills, initiative, and self help, and an attempt was made to select characteristics of teachers which were associated with total growth in social competency as well as each of the subscale scores. The CL was administered three times over a one and one-half year period. Comparisons were made between CL1, CL2, and CL3 to determine individual and class growth in social competency.

Groups of teachers were selected by examining the class mean percentage gain scores on the CL. Class mean gain scores were calculated for total score as well as the four subscale scores over CL1, CL2, and CL3. Teachers whose students showed more gain on the CL constituted one group of teachers and teachers whose students showed less gain on the CL made up the second group of teachers. Separate groups of teachers were established for the different CL totals and subscales over the three CL administrations.

The group differences computer program always examined two groups of teachers: one group of teachers whose students showed high gain on some aspect of the CL and another group of teachers whose students showed little or no gain on the CL. The goal of the computer search was to select from among the pool of teacher variables the single characteristics or those variables in combinations of twos and threes which best discriminated between teachers whose students showed more gain and teachers whose students showed little or no gain on the same aspect of the CL.

The results presented single characteristics, dyadic characteristics, and triadic characteristics which best discriminated between the groups of teachers who were established on the basis of (a) student mean percentage gain on CL total score, (b) student mean percentage gain on CL communication score, (c) student mean percentage gain on CL social skills score, (d) student mean percentage gain on CL initiative score, and (e) student mean percentage gain on CL self help score.

The search program was used toward the reduction of the number of characteristics in the data pool to those which appeared to have significant relationship with pupil growth in TMR classes. Once the characteristics were selected through the group differences analysis, the next step in the analysis was to attempt to cluster the teacher characteristics.

SEARCH PROGRAM REFERENCES

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Cook, W.W. Leeds, C.H., Callis R. *Minnesota Teacher Attitude Inventory Manual*. New York: The Psychological Corp., 1951.

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Johnson, M.C. *Programs for Statistical Computation*, Unpublished paper. School of Education, University of Michigan, October, 1966.

Semmel, M.I. and Dickson, S. Cognitive Reactions of College Students to Disability Labels. *Exceptional Children*, 1966, *32*, 443-450.

MULTIVARIATE ANALYSIS

MULTIVARIATE ANALYSIS OF TEACHER AND PUPIL VARIABLES

Cluster Analysis of Teacher Variables

The initial exploratory procedures (that is, SPOSE and Group Differences Programs) were considered a natural consequence of the data collection in the study. Originally, as much data as possible was collected on both teachers and children. Since this strategy resulted in a large data mass, it was necessary as a next step to employ statistical procedures designed to refine the data pool. For this reason a cluster analysis of teacher and pupil variables was chosen as the next logical step in the statistical analysis of the data.

According to Perkuchen (1968), once a set of descriptors is available to measure relevant information about the individuals within a selected sample being studied, it is possible to use a cluster analysis computer program to split the sample into homogeneous groups given a set of N descriptors which are relevant to the individual's physical world. In the current exploratory project, the teacher clusters were to be determined from the demographic test and rating data described previously. The clusters of teachers were determined by their degree of similarity on this set of data. The children were to be clustered by variables that might possibly affect their status and growth, such as chronological age, intelligence score and socio-economic status providing that teacher clusters could be found. If clusters for the teachers and their TMR children were found, they would form the different levels for the two fixed factors, teachers and TMR children, a two-way analysis of variance. The cell entries for several analyses would then be the gain scores for the TMR children on the total and subtest scores, respectively, between the first and last administration of the CL. The investigators hoped to determine whether the difference in TMR pupil growth as measured by the CL could be accounted for by the different types of teachers classified by the cluster analysis program and to demonstrate an interaction between TMR and teacher characteristics and pupil growth. However if clusters were not formed, then it might be possible to conclude that the individuals were homogeneous as far as the collected data was concerned.

Description of Cluster Analysis Program

A multidimensional-scaling computer program based on a recent cluster model (Perkuchen, 1968) was employed to analyze the data for the teachers and the TMR children. Perkuchen describes his model as ".....essentially that of Edwards and Cavalli - Sforza (1965)." Succinctly, the model uses an analysis of variance technique to partition the points which represent individuals in a multivariate space into the two most compact clusters. Each of the two resultant clusters is divided into two more compact clusters. This process is repeated sequentially until only one person is a member of the remaining clusters. Each division is determined by locating the split of a summet recall matrix, whose rows and columns represent people that will minimize the within clusters sum of squares for the two clusters. The cell entries of the matrix are the squared Euclidean distance measures of profile similarity between the people.

A list of the 23 variables used to form clusters of the teachers in the present sample is shown in Table 51. The variables were all standardized before the Euclidean distance measure of profile similarity was computed between each of the teachers in the sample. The researchers either felt that the variables were reliable or elected to assume that they were. The 23 variables satisfied the requirements of the clustering model; that is: (a) a descriptor's numerical value must be capable of being rank ordered; and (b) the scale of measurement of the descriptors must be at the interval scale level. In addition, the variables were experimentally independent of one another, and seemed to provide some discrimination between teachers.

Results and Discussion

The analysis and discussion of the clustering results is taken from Perkuchen (1968) who used the data as a partial test of his modification of the clustering model.

Figure 9 shows the constructed hierarchical tree diagram developed from the computer output. The numbers contained within

TABLE 51

WAYNE COUNTY INTERMEDIATE SCHOOL DISTRICT
TRAINABLE PROJECT
VARIABLES USED FOR TEACHERS

	CARD I Cols.	VARIABLES
1	6	Number of children
2	7	Training
3	12-13	Age at which decided to become a teacher
4	18-19	Hours a week in outside preparation
5	37-38	Total years teaching experience
6	59-61	Pre: Minnesota Teacher Attitude Inventory
7	68-69	Pre: Edwards Achievement
8	70-71	Pre: Edwards Deference

	CARD II Cols.	VARIABLES
9	3-4	Pre: Edwards Exhibition
10	5-6	Pre: Edwards Antonomy
11	7-8	Pre: Edwards Affiliation
12	9-10	Pre: Edwards Intraception
13	11-12	Pre: Edwards Succorance
14	13-14	Pre: Edwards Dominance
15	15-16	Pre: Edwards Abasement
16	17-18	Pre: Edwards Nurturance
17	19-20	Pre: Edwards Change
18	21-22	Pre: Edwards Endurance
19	23-24	Pre: Edwards Heterosexuality
20	25-26	Pre: Edwards Aggression

TABLE 51

WAYNE COUNTY INTERMEDIATE SCHOOL DISTRICT
TRAINABLE PROJECT
VARIABLES USED FOR TEACHERS

	CARD III Cols.	VARIABLES
21	5-7	Pre: S. A. Q. Total Points
22	15-16	Pre: Edwards Order
23	17-19	Teacher Age in total months as of September 1965

FIGURE 9

HIERARCHICAL TREE DIAGRAM OF THE WAYNE COUNTY INTERMEDIATE SCHOOL DISTRICT TRAINABLE PROJECT TEACHERS' CLUSTERING

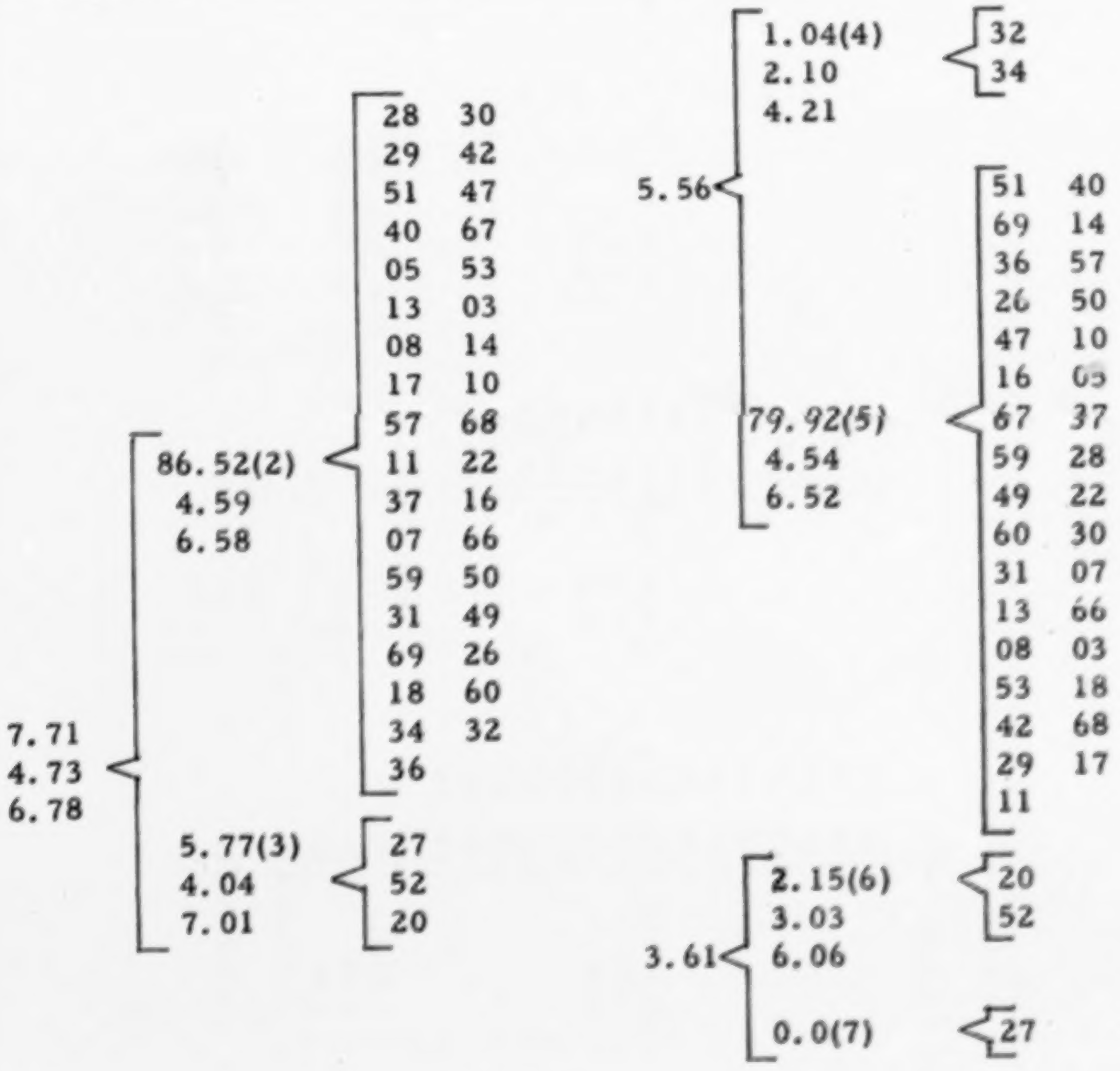

7.71
4.73
6.78
86.52(2)
4.59
6.58
28 30
29 42
51 47
40 67
05 53
13 03
08 14
17 10
57 68
11 22
37 16
07 66
59 50
31 49
69 26
18 60
34 32
36
5.77(3)
4.04
7.01
27
52
20
5.56
1.04(4)
2.10
4.21
32
34
79.92(5)
4.54
6.52
51 40
69 14
36 57
26 50
47 10
16 05
67 37
59 28
49 22
60 30
31 07
13 66
08 03
53 18
42 68
29 17
11
3.61
2.15(6)
3.03
6.06
20
52
0.0(7)
27

FIGURE 9
CON'T.

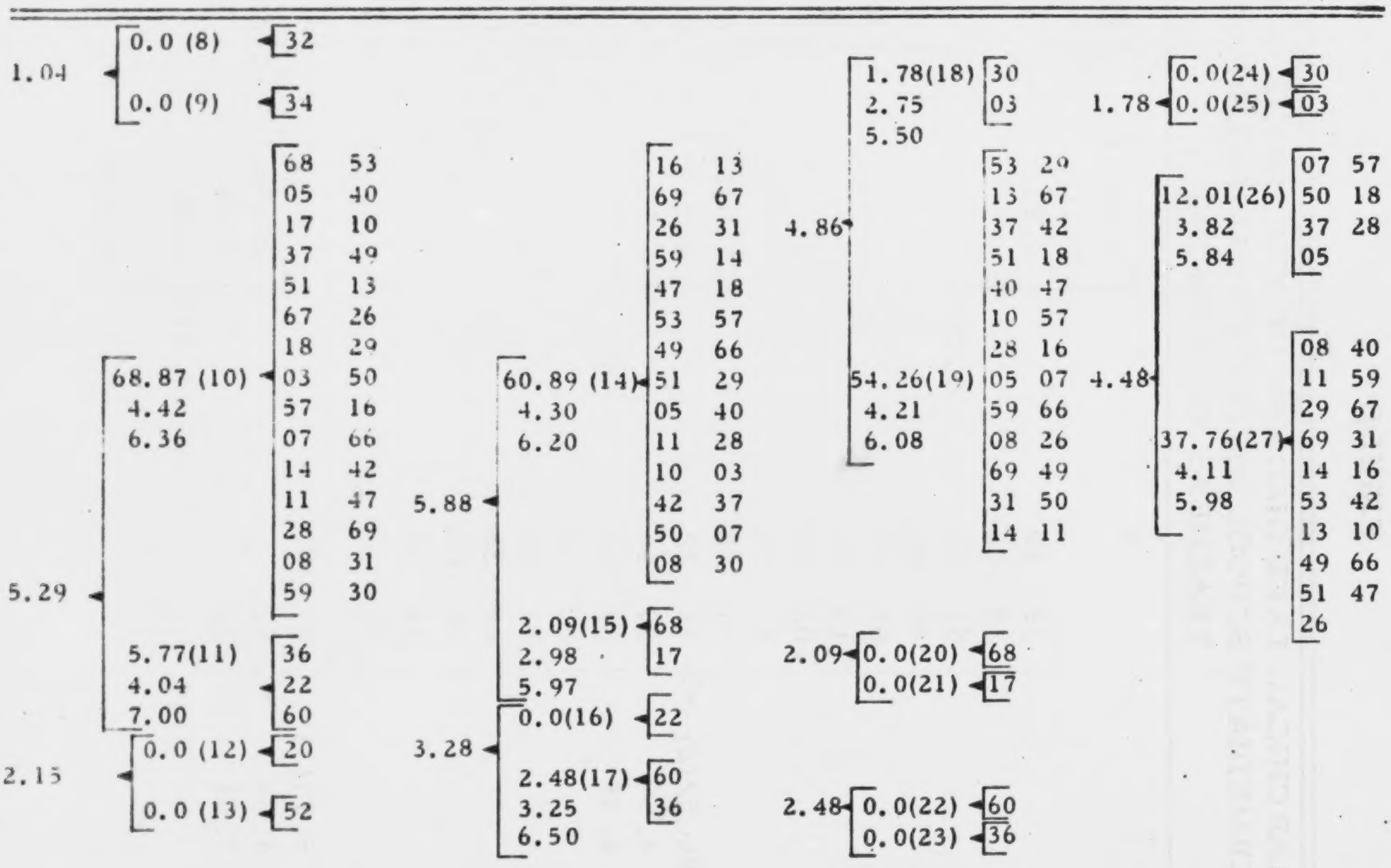
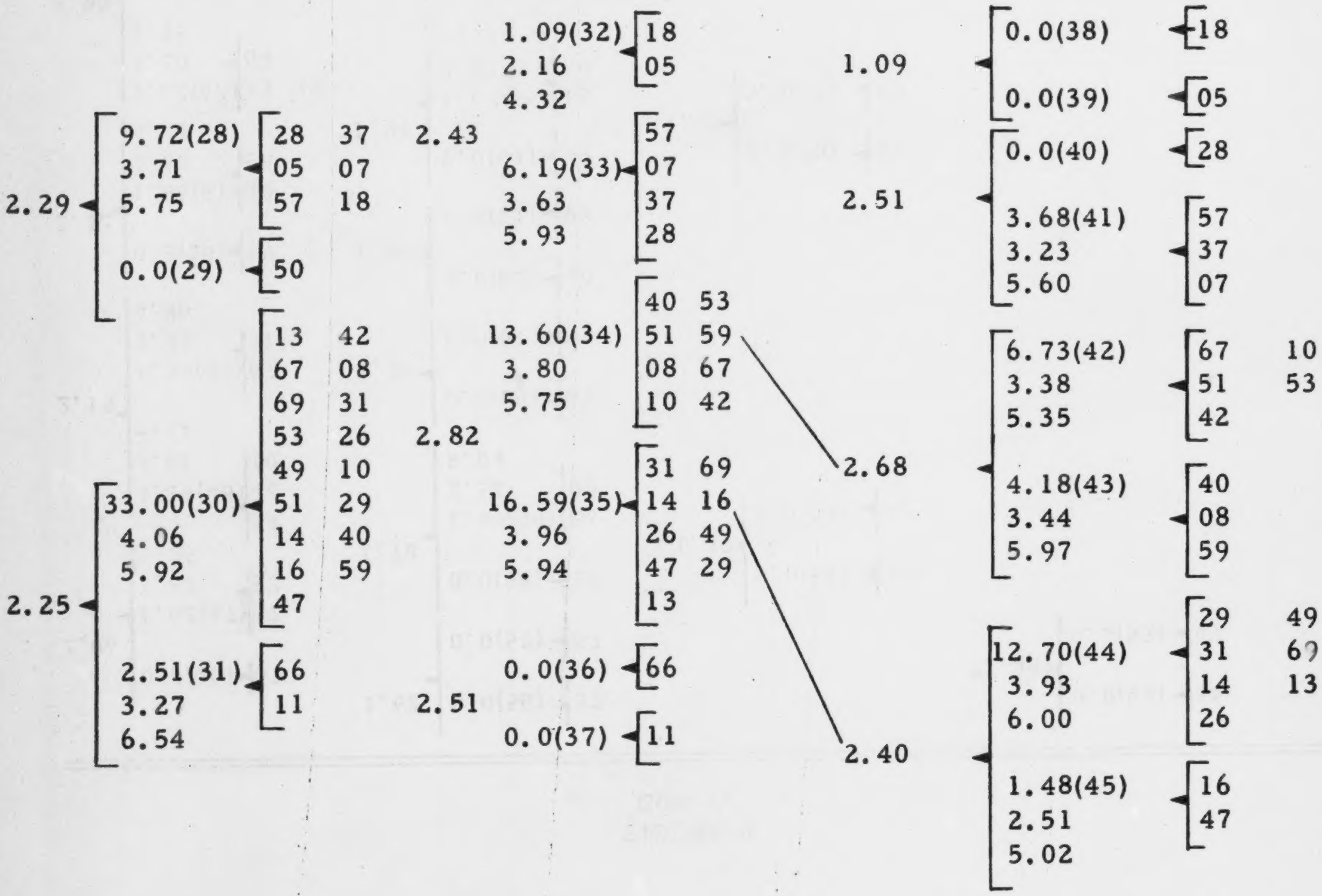

1.04
0.0 (8) 32
0.0 (9) 34
5.29
68.87 (10)
4.42
6.36
68 53
05 40
17 10
37 49
51 13
67 26
18 29
03 50
57 16
07 66
14 42
11 47
28 69
08 31
59 30
5.77(11)
4.04
7.00
36
22
60
2.15
0.0 (12) 20
0.0 (13) 52
5.88
60.89 (14)
4.30
6.20
16 13
69 67
26 31
59 14
47 18
53 57
49 66
51 29
05 40
11 28
10 03
42 37
50 07
08 30
2.09(15) 68
2.98 17
5.97
3.28
0.0(16) 22
2.48(17) 60
3.25 36
6.50
4.86
1.78(18) 30
2.75 03
5.50
53 29
13 67
37 42
51 18
40 47
10 57
28 16
54.26(19) 05 07
4.21 59 66
6.08 08 26
69 49
31 50
14 11
2.09
0.0(20) 68
0.0(21) 17
2.48
0.0(22) 60
0.0(23) 36
1.78
0.0(24) 30
0.0(25) 03
4.48
12.01(26)
3.82
5.84
07 57
50 18
37 28
05
37.76(27)
4.11
5.98
08 40
11 59
29 67
69 31
14 16
53 42
13 10
49 66
51 47
26

FIGURE 9
CON'T.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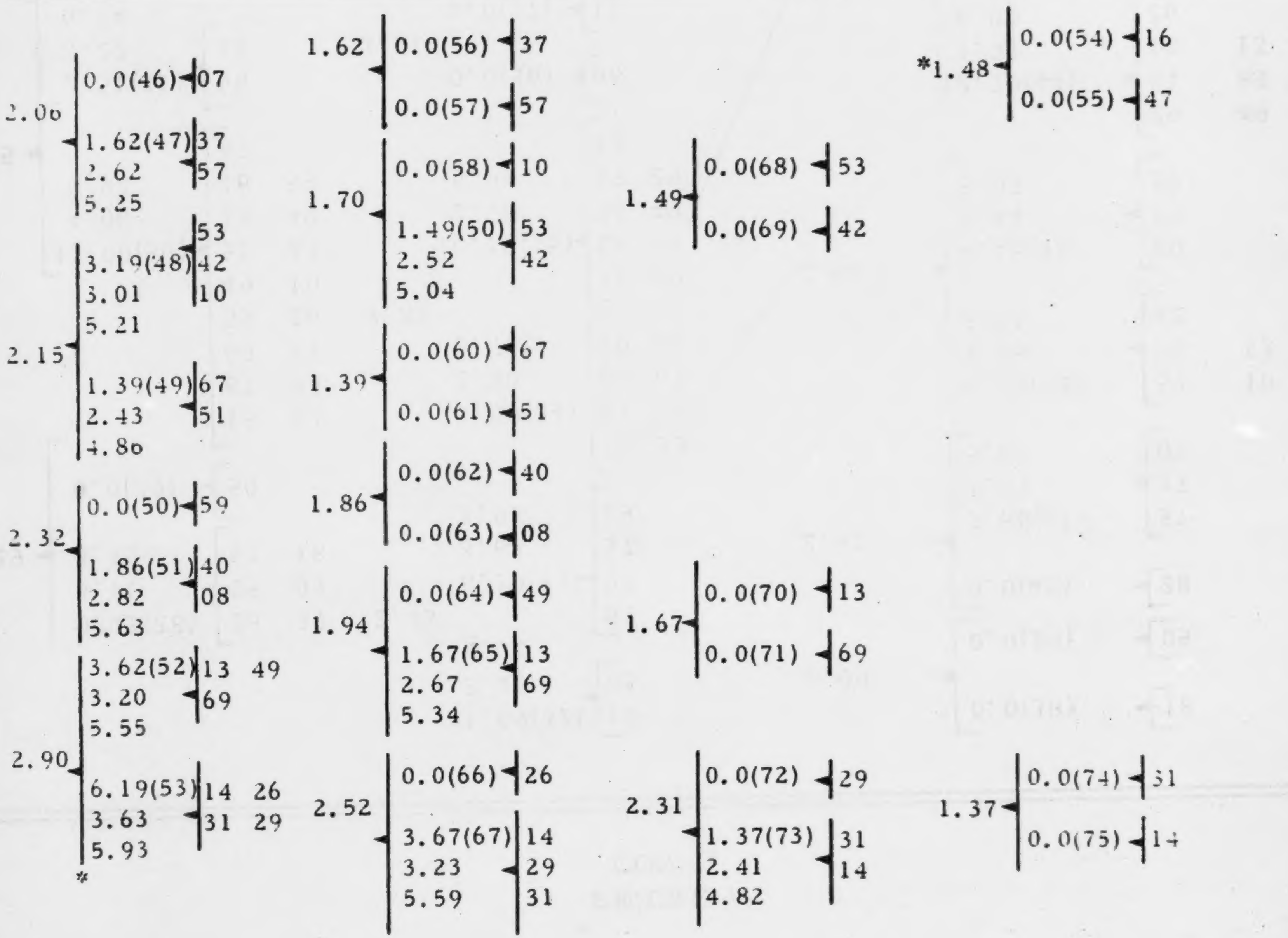
2.16
4.32
18
05
1.09
0.0(38)
18
0.0(39)
05
9.72(28)
3.71
5.75
2.29
28 37
05 07
57 18
2.43
57
6.19(33)
3.63
5.93
07
37
28
0.0(40)
28
2.51
3.68(41)
3.23
5.60
57
37
07
0.0(29)
50
40 53
13.60(34)
3.80
5.75
51 59
08 67
10 42
13 42
67 08
69 31
53 26
49 10
51 29
14 40
16 59
47
2.82
6.73(42)
3.38
5.35
67 10
51 53
42
33.00(30)
4.06
5.92
2.25
31 69
16.59(35)
3.96
5.94
14 16
26 49
47 29
13
2.68
4.18(43)
3.44
5.97
40
08
59
2.51(31)
3.27
6.54
66
11
2.51
0.0(36)
66
0.0(37)
11
2.40
12.70(44)
3.93
6.00
29 49
31 69
14 13
26
1.48(45)
2.51
5.02
16
47

FIGURE 9
CON'T.


2.06
0.0(46) 07
1.62(47) 37
2.62 57
5.25
53
3.19(48) 42
3.01 10
5.21
2.15
1.39(49) 67
2.43 51
4.86
2.32
0.0(50) 59
1.86(51) 40
2.82 08
5.63
3.62(52) 13 49
3.20 69
5.55
2.90
6.19(53) 14 26
3.63 31 29
5.93
*
1.62
0.0(56) 37
0.0(57) 57
0.0(58) 10
1.70
1.49(50) 53
2.52 42
5.04
0.0(60) 67
1.39
0.0(61) 51
0.0(62) 40
1.86
0.0(63) 08
0.0(64) 49
1.94
1.67(65) 13
2.67 69
5.34
0.0(66) 26
2.52
3.67(67) 14
3.23 29
5.59 31
0.0(68) 53
1.49
0.0(69) 42
0.0(70) 13
1.67
0.0(71) 69
0.0(72) 29
2.31
1.37(73) 31
2.41 14
4.82
0.0(54) 16
*1.48
0.0(55) 47
0.0(74) 31
1.37
0.0(75) 14

parentheses are the cluster numbers, for example, (4). The decimal number immediately to the left of the cluster number, 1.04, is the within cluster sum of squares' percentage of the total sum of squares for the entire sample of 38 teachers. The first decimal number, 2.10, immediately below the latter decimal number 1.04 is the standard deviation of the cluster, and the next decimal number directly below it, 4.21, is the mean distance between two persons in the cluster. If the within cluster sum of squares' percentage of the total sum of squares is zero (0.0), then the standard deviation of the cluster and the mean distance between two persons in the cluster will also be zero (0.0). When this is the case only one decimal number (0.0) will be found to the left of the cluster number.

An exception to all of the above occurs before the first brace in Figure 9. The two numbers below 7.71 represent the standard deviation and mean distance between two persons for the entire sample of 38 teachers: 4.73 and 6.78 respectively. If the user desired, he could include three other numerical values in the hierarchical tree diagram: namely, the distance between the mean of the parent cluster from the mean of both of its two resultant clusters and the distance between the means of the two resultant clusters.

Each column of two or more clusters (i.e., column two) represents one iteration level which splits the preceding column's clusters each (2) into two new clusters (4 and 5). The members of a specific cluster are contained within the brace to the right of the cluster number. The number to the left of the brace, 5.56, which joins the two clusters (4 and 5) formed by the split of the preceding cluster (2) is the percentage of the total sum of squares which is the between clusters sum of square for the respective two clusters (4 and 5).

The results shown in Figure 9 indicate that within the sample of 38 studied there are no distinct clusters of teachers based upon the descriptors used. This conclusion was reached primarily because the largest between clusters sum of squares is only 7.71% of the total sum of squares, and the clusters which have 5.00% or less of the total sum of squares have only three or two members, most often just two members.

Unfortunately, the results do not provide answers to the questions stated earlier; namely, can the difference in the growth of TMR children be accounted for by the different types of teachers classified in this study, and can interaction between TMR children characteristics and teacher characteristics be demonstrated?

Based on the results, it would seem that the 23 descriptors fail to discriminate between the teachers. Either the teachers are too homogeneous a group and can never be clustered no matter what descriptors are employed or what clustering model is used, or the descriptors that will discriminate teachers and TMR children must still be discovered and placed through a similar process as used above.

REFERENCES

1. Edwards, W. F., and Cavalli-Sforza, L. L. A method for cluster analysis. Biometrics, 1965, 362-375.
2. Perkuchin, D. N. A Clustering Model and its Utilization. Unpublished doctoral dissertation, the University of Michigan, 1968.

Multiple Discriminant Analysis of Selected Variables

Since the clustering program did not reveal any significant clusters among teachers, it was decided to employ multiple discriminant analysis as a fourth step in the exploratory analysis of teacher and child characteristics and their relation to growth among trainable mentally retarded children in special classes. A multiple discriminant analysis employing a computer makes possible the screening of large masses of data in a search for patterns of responses that discriminate or classify groups of subjects on various dependent variables.

The present stage of multivariate analysis of the data involved a multiple discriminant analysis of 300 children whose percentage gain on the total score of the Cain Levine Social Competency Scale (CL) between the first and third administrations was either above or below the median. The purpose of this analysis was to determine what combination of pupil and teacher variables could best discriminate or classify individuals into high and low percentage gainers (HPG or LPG) on the CL over the two administrations of the test.

Description of Computer Program

To perform this analysis, the investigators employed a computer program from the statistical research laboratory of the University of Michigan. The program, entitled "Stepwise Discriminant Analysis," computes a set of linear functions to be used to classify an individual into one of several groups. The group assignment procedure is derived from a model of a multivariate normal distribution of observations for each group such that the covariance matrix is the same for all groups. A multiple discriminant analysis is performed in a stepwise manner. At each step, one variable is entered into or removed from the set of discriminating variables. At each step, the variable with the greatest F value is entered; i.e., the variable which gives the greatest decrease in the ratio of within to total generalized variance. A variable is removed from the analysis when its F value becomes too low. One variable is thus entered into the functions at a time, indicating relative importance in discrimination.

At each step, the following statistics are provided:

(1) variables included and F value

(2) variables not included and F value

(3) approximate F statistic to test equality of group means

(4) discriminant functions

(5) classification matrix.

The classification matrix summarizes how well the discriminant functions succeeded in discriminating between the groups. The program also computes the canonical correlations and coefficients for canonical variables, and plots the first two canonical variables to give an optimal two dimensional picture of the dispersion of the groups.

Results and Discussion

Two stepwise discriminant analyses were performed on the data. The first multiple discriminant analysis contained a variable set of sixteen variables which were chosen by the investigators as having possible discriminatory power. The variables chosen are shown in Table 52.

Of the sixteen variables, the output of the computer program indicated that on only four of these were the values of the F statistic sufficient for inclusion in the set of discriminating variables. Those four variables were ranked in the following decreasing order of relative importance in discriminating the high and low percentage gain subjects on the CL total score:

(1) variable 10 - number of years the child has been in the present program (as of 1965)

(2) variable 15 - Cain-Levine Self Help Score

(3) variable 2 - number of older siblings in the family

(4) variable 6 - age of father.

TABLE 52

VARIABLE SET FOR THE FIRST STEPWISE DISCRIMINANT ANALYSIS

Number	Variable
1	I. Q. (Stanford-Binet)
2	Number of older siblings
3	Number of younger siblings
4	Father's occupational level
5	Father's educational level
6	Age of father
7	Mother's occupational level
8	Mother's educational level
9	Age of mother
10	Number of years the child has been in the present program (as of 1965)
11	Cain-Levine total score (administration #1)
12	Cain-Levine communication score (administration #1)
13	Cain-Levine social skills score (administration #1)

TABLE 52

VARIABLE SET FOR THE FIRST STEPWISE DISCRIMINANT ANALYSIS

Number	Variable
14	Cain-Levine independence score (administration #1)
15	Cain-Levine self help score (administration #1)
16	Age of child as of 11-1-65

With respect to variable 10, the LPG subjects spent an average of 1.57 years in the present program (SD = 0.907) while the HPG group spent an average of 2.19 years in the program (SD = 1.56). The difference in means was statistically significant (F = 17.68, $p < .01$). Variable 10 was able to discriminate or correctly classify 56.0% of the HPG subjects and 59.3% of the LPG subjects.

With respect to variable 15, the LPG subjects obtained an average score of 38.6 on the Self Help Scale of the CL (SD = 12.4), while the HPG subjects obtained an average score of 43.2 (SD = 13.3). The difference in means was significant (F = 9.54, $p < .01$). With the addition of variable 15 to the analysis, the two variables together were able to correctly classify 66% of the HPG subjects and 61.3% of the LPG subjects.

With respect to variable 2, the LPG subjects had on the average 1.84 older siblings (SD = 2.13), while the HPG subjects had on the average 2.54 older siblings (SD = 2.26). The difference in means was statistically significant (F = 6.13, $p < .05$). With the addition of variable 2 to the analysis, the three variables together were able to correctly classify 55% of the HPG subjects and 60% of the LPG subjects.

With respect to variable 6, the average age of the fathers of HPG subjects was 34.0 years (SD = 1.50) while that of the fathers of LPG subjects was 38.0 years (SD = 1.61). The difference in means was significant (F = 4.14, $p < .05$). With the addition of variable 6 to the analysis, the four variables together were able to correctly classify 70.7% of the HPG subjects and 63.3% of the LPG subjects.

According to the output of the program, the F values of the remaining 12 variables were below the critical 0.05 level of significance for inclusion in the multiple discriminant analysis. If the remaining variables were included in the stepwise analysis, the discriminatory power of the final discriminant functions would be less than the power of the discriminant functions based on the four variables already discussed. For instance, with the addition of all 16 variables to the analyses, the program is able to correctly classify only 69.3% of the HPG subjects and 59.3% of the LPG subjects. The constant lesser accuracy in classifying the LPG subjects at each step of the analysis is partly attributed to the greater heterogeneity of variance of the LPG group as indicated by the larger SD's for this group on the 4 variables selected in the stepwise analysis. The two dimensional plot of the canonical variables further reveals the greater relative dispersion among the LPG group.

In general, it may be concluded that using the four variables selected by the program as demonstrating discriminatory power, we are able to correctly classify approximately 67% of all subjects into their respective percentage gain groups. However, 33% of the subjects were misclassified when classification was based on the four variables selected by the program. As a result, it appears that other variables that were not investigated in this study exist which, if included in the variable set, could possibly improve the correct classification of subjects into their respective groups.

Multiple Discriminant Analysis of Teacher Data

The second multiple discriminant analysis contained a variable set of 9 variables which were selected by the investigators and the Group Differences Program as important teacher training variables. The aim was to investigate the discriminatory power of significant teacher training variables. The variables chosen are shown in Table 53. Data was collected on 38 teachers. The dependent variable was the mean percentage gain of the pupils in the respective 38 classes on the total score of the CL (between the first and third administrations of the test). The 38 classes were ranked into a high or low percentage gain (HPG or LPG) group on the basis of the median mean percentage gain score of the total group (i.e., 38 classes).

Of the nine teacher training variables, the output of the computer program indicated that in none of these were the values of the F statistic sufficient for inclusion in the set of discriminating variables. The one way ANOVA's between pairs of means of the high and low percentage gain groups for each of the nine variables revealed no differences between any of the pairs of group means. All F's were less than 1.00 except on variable 5 where an F of 2.00 was obtained, ($F_{.05,\ 1,38} = 4.12$). It may be concluded, therefore, that none of the

TABLE 53

VARIABLE SET FOR THE SECOND STEPWISE DISCRIMINANT ANALYSIS

Number	Variable
1	Educational training
2	Student teaching experience
3	Student teaching experience with the mentally retarded
4	Student teaching experience with other special education groups
5	Number of years teaching trainable mentally retarded children
6	Number of years teaching educable mentally retarded children
7	Total years teaching experience
8	Teacher age (in months) as of 9-1-1965
9	Number of years teaching normal children

chosen teacher training variables possessed adequate discriminatory power for correctly classifying the 38 classes into HPG or LPG groups. The two groups of teachers (i.e., teachers whose classes ranked in the HPG or LPG group), where thus too similar on each of the nine teacher training variables. The reader will notice that a similar finding was obtained from the cluster analysis program using a different set of teacher variables.

SUMMARY

In general, it may be concluded that the vast majority of teacher and pupil variables investigated in this study possessed relatively little discriminatory power for correctly classifying either the individual pupils or classes. This result is surprising in that the investigators took extreme care to include only those teacher and pupil variables which were thought to have a high relationship to TMR pupil progress in special classes. The investigators decided, therefore, that it would be appropriate as a next stage in the exploratory analysis of the teacher and pupil data to focus on single variables in an attempt to discover significant predictors of growth scores for both teachers and children.

REFERENCES

1. Statistical Research Laboratory *Stepwise Discriminant Analyses*. Unpublished paper, Ann Arbor: University of Michigan, 1968.

ANALYSIS OF VARIANCE AND STEPWISE REGRESSION

The fifth empirical step in the present exploratory analysis employed analysis of variance and stepwise regression of teacher and child characteristics. These analyses were performed in order to determine the following: (a) if there were differences between the means of two teacher groups and two child groups on a variety of personal and professional characteristics; and (b) to determine if specific teacher and child variables might be isolated and used to predict teacher success through a formula.

Because of the exploratory nature of the study, a number of primary and secondary purposes were established to guide the data analysis. One of the primary purposes was to explore the relationship between the professional experiences, attitudes, and selected personality characteristics of teachers and the growth of Trainable Mentally Retarded (TMR) children. It was also a primary purpose of the study to explore the relationship between various child characteristics and the school progress made by these children.

In addition, the study was directed toward an investigation of the combination of independent variables that may be generated as the best predictor of child growth in a multiple linear regression equation, and to determine the proportion of variance accounted for by the best predictive combination of variables.

Subjects

Teacher sample. The decision was made to focus only on those teachers who were present during the entire study. The rationale for this decision was that the dependent variable, calculated between administrations 1 and 3, would be the most reliable measure of child growth available to the investigators. Upon observation of the teacher data, it was determined that a total of 39 teachers were present during all administrations of the Cain-Levine Social Competency Scale (CL). Of the original 39 teachers, one was subsequently dropped because she reportedly filled out CL scores on only one child for all three administrations. Therefore, a total of 38 TMR teachers were included in the sample.

Child sample. Since all CLs were administered by classroom teachers, the investigators felt a significant amount of variance might enter into the calculation of growth scores where CLs were filled out by two different teachers. In order to avoid this bias, growth scores were calculated only for those children present with the same teacher throughout all three CL administrations. This procedure resulted in the inclusion of 347 TMR children in the sample.

In this analysis, the 38 teachers and 347 TMR children were dichotomized into high and low gain groups in order to investigate the relationship between teacher and child characteristics and the school progress of TMR children. Two teacher groups were formed through rank-ordering the teacher mean scores and assigning the 19 teachers above the median to the high gain teacher (HGT) group, while 19 teachers below the median were assigned to the low gain teacher (LGT) group. Child groups were formed in a similar manner using individual child growth scores and assigning the 174 children above the median to the high gain child (HGC) group, while the 173 children below the median were assigned to the low gain child (LGC) group.

RESULTS AND DISCUSSION

Analysis of Variance

The analysis of variance-single classification program (Johnson, 1966) was used to test for significant differences between groups. A summarization of the statistical results on the relationship between the characteristics of LGT to growth scores are reported as follows: (a) professional teaching experiences; (b) chronological age and teacher attitudes; and (c) selected personality characteristics. Results of analyses of variance on the relationship between the characteristics of the HGC and LGC groups to growth scores have been summarized and are reported as follows: (a) biographical data; (b) pretest scores on the total CL and four subscales.

A summary of the analyses of variance between the two teacher groups on professional teaching experience is given in Table 54. Since none of the F ratios were found to be significant it was concluded that no"significant differences existed

TABLE 54

COMPARISON OF HIGH GAIN AND LOW GAIN TEACHER GROUPS ON BIOGRAPHICAL DATA AND ATTITUDE SCORES

Variable Source of Variation	df	Sum of Squares	Mean Square	F	
Years Teaching TMRs					
Between	1	6.74	6.74	2.00	N.S.
Within	36	121.26	3.37		
Total	37	128.00			
Years Teaching EMRs					
Between	1	3.06	3.06	0.17	N.S.
Within	14	248.88	17.78		
Total	15	251.94			
Years Teaching Normals					
Between	1	37.50	37.50	1.03	N.S.
Within	22	800.33	36.38		
Total	23	837.83			
Total Years Teaching					
Between	1	0.66	0.66	0.01	N.S.
Within	36	1728.84	48.02		
Total	37	1729.50			

N.S. = Not Significant at .05 level

between the HGT and LGT'' groups on the number of years teaching TMR children, EMR children, normal children, or the total number of years of teaching experience.

The results of analyses of variance between the HGT and LGT groups on chronological age and teacher attitudes are reported in Table 55. Again no significant differences were found between the two teacher groups on their mean chronological age or teacher attitudes, as measured by the MTAI and SAQ instruments.

Table 56 and 57 contain summaries of analyses of variance between the two teacher groups on 15 personality characteristics of the EPPS. Significant differences were found between the HGT and LGT groups on the Interception ($p < .05$) and Heterosexuality ($p < .01$) subscales. Observation of the mean scores for the two groups indicated that the HGT group had a mean Intraception score of 19.32 and a mean Heterosexuality score of 15.06, while the LGT group had a mean Intraception score of 16.37 and a mean Heterosexuality score of 10.53. No significant differences were found between the two groups on the 13 remaining subscales of the EPPS.

Results of the analyses of variance between the HGC and LGC groups on chronological age and IQ are given in Table 58. No significant differences were found between groups on either CA or IQ. The HGC group received a mean CA of 12 years and 2 months and a mean IQ of 44 points, while the LGC group received a mean CA of 11 years and 8 months and a mean IQ of 45 points.

An investigation of the pretest scores of the two groups was conducted to determine if there was an association between pretest status on the CL and later growth scores. A summary of the analyses of variance of the status scores is reported in Table 59. Significant *F* ratios were associated with the CL Total Score ($p < .05$), the Communications subscale ($p < .01$), and the Self Help subscale ($p < .01$). The HGC group scored significantly higher than the LGC group on all three scales. The HGC group received a mean CL Total Score of 124.32, a mean Communications score of 29.25, and a mean Self Help score of 42.78. The LGC group received a mean CL Total Score of 115.20, a mean Communications score of 27.07, and a mean Self Help score of 39.16.

TABLE 55

COMPARISON OF HIGH GAIN AND LOW GAIN TEACHER GROUPS ON BIOGRAPHICAL DATA AND ATTITUDE SCORES

Variable	Source of Variation	df	Sum of Squares	Mean Squares	F	
Chronological Age						
	Between	1	9920.95	9920.95	0.56	N.S.
	Within	36	641959.89	17832.22		
	Total	37	651880.84			
Minnesota Teacher Attitude Inventory						
	Between	1	0.66	0.66	0.00	N.S.
	Within	36	46126.11	1281.28		
	Total	37	46126.76			
Student Attitude Inventory						
	Between	1	3078.00	3078.00	0.60	N.S.
	Within	36	183183.05	5088.42		
	Total	37	186261.05			

N.S. = Not Significant at .05 level

TABLE 56

COMPARISON OF HIGH GAIN AND LOW GAIN TEACHER GROUPS ON THE FIRST 7 SUBTESTS OF THE EPPS

Variable	Source of Variation	df	Sum of Squares	Mean Square	F
Achievement					
	Between	1	3.18	3.18	0.21
	Within	36	549.79	15.27	
	Total	37	552.97		
Deference					
	Between	1	5.92	5.92	0.49
	Within	36	433.89	12.05	
	Total	37			
Order					
	Between	1	0.95	0.95	
	Within	36	823.26	22.87	
	Total	37	824.21		
Exhibition					
	Between	1	13.92	13.92	0.68
	Within	36	735.05	20.42	
	Total	37			

TABLE 56

COMPARISON OF HIGH GAIN AND LOW GAIN TEACHER GROUPS ON THE FIRST 7 SUBTESTS OF THE EPPS

Variable	Source of Variation	df	Sum of Squares	Mean Square	F
Autonomy					
	Between.......	1	2.13	2.13	0.09
	Within	36	896.63	24.91	
	Total	37	898.76		
Affiliation					
	Between.......	1	7.61	7.61	0.43
	Within	36	641.79	17.83	
	Total	37	649.39		
Intraception					
	Between.......	1	82.53	82.53	4.33 *
	Within	36	686.53	19.07	
	Total	37	769.05		

* Sig. < .05 level

TABLE 57

COMPARISON OF HIGH GAIN AND LOW GAIN TEACHER GROUPS ON THE FIRST 8 SUBTESTS OF THE EPPS

Variable	Source of Variation	df	Sum of Squares	Mean Square	F
Change					
	Between.......	1	8.53	8.53	0.43
	Within	36	720.74	20.02	
	Total	37	729.26		
Endurance					
	Between.......	1	11.61	11.61	0.75
	Within	36	558.11	15.50	
	Total	37	569.71		
Heterosexuality					
	Between.......	1	189.62	189.62	10.34 **
	Within	35	641.68	18.33	
	Total	36	831.30		
Aggression					
	Between.......	1	37.63	37.62	1.56
	Within	35	846.11	24.17	
	Total	36	883.73		

** Sig. $<$ .01 level

TABLE 57

COMPARISON OF HIGH GAIN AND LOW GAIN TEACHER GROUPS ON THE FIRST 8 SUBTESTS OF THE EPPS

Variable	Source of Variation	df	Sum of Squares	Mean Square	F
Succorance					
	Between.......	1	32.24	32.24	2.23
	Within	36	520.84	14.47	
	Total	37	553.08		
Dominance					
	Between.......	1	3.79	3.79	0.20
	Within	36	681.26	18.92	
	Total	37	685.05		
Abasement					
	Between.......	1	63.18	63.18	2.42
	Within	36	940.21	26.12	
	Total	37	1003.39		
Nurturance					
	Between.......	1	0.24	0.24	0.01
	Within	36	704.63	19.57	
	Total	37	704.87		

TABLE 58

COMPARISON OF HIGH GAIN AND LOW GAIN CHILDREN ON CHRONOLOGICAL AGE AND IQ

Variable	Source of Variation	df	Sum of Squares	Mean Square	F
Chronological Age					
	Between	1	3263.67	3263.67	0.54 N.S.
	Within	341	2063026.78	6049.93	
	Total	342	2066290.44		
IQ					
	Between	1	87.02	87.02	0.99 N.S.
	Within	305	26719.16	87.60	
	Total	306	26806.18		

N.S. = No Significant at .05 level

TABLE 59

COMPARISON OF HIGH GAIN AND LOW GAIN CHILDREN ON CAIN LEVINE TOTAL AND SUBSCALE SCORES

Variable	Source of Variation	df	Sum of Squares	Mean Square	F
Total Cain Levine					
	Between	1	7214.62	7214.62	6.06 *
	Within	345	410922.93	1191.08	
	Total	346	418137.56		
Communications					
	Between	1	413.60	413.60	7.04 **
	Within	345	20258.04	58.72	
	Total	346	20671.64		
Social Skills					
	Between	1	246.41	246.41	3.38
	Within	345	25141.48	72.87	
	Total	346	25387.89		
Independence					
	Between	1	214.67	214.67	2.83
	Within	345	26128.53	75.73	
	Total	346	26343.20		

TABLE 59

COMPARISON OF HIGH GAIN AND LOW GAIN CHILDREN ON CAIN LEVINE TOTAL AND SUBSCALE SCORES

Variable	Source of Variation	df	Sum of Squares	Mean Square	F
Self Help					
	Between	1	1133.04	1133.04	6.86 **
	Within	345	57023.73	165.29	
	Total	346	58156.77		

* Sig. $<$ .05 level
** Sig. $<$ .01 level

Stepwise Regression

As previously stated, a secondary purpose of the study was to investigate the development of a number of formulae to be used in predicting pupil growth scores from both teacher and child variables. Analysis was conducted in order to observe the various combinations of independent variables that were generated in a mutual regression equation and to report the amount of variance accounted for by the best predictive combination of variables.

The PSCC Stepwise Regression program (Johnson, 1966) developed at the University of Michigan Computing Center for the IBM 360:67 Computer, was used to compute a sequence of multiple linear regression equations in a stepwise manner. The various steps in the development of a regression equation are in order of importance, in that the variable that accounted for the greatest reduction in the error sum of squares, for that particular step, is the one that is added to the equation. At the first step in the regression analysis the variable that is chosen is the one that also has the highest correlation with the dependent variable. During the second steps, and all subsequent steps, the variables that are selected are those which, in combination with the previously selected variables, combine to form the best predictive equation.

The output from the program includes the following information for each step in the regression analysis: (a) multiple R; (b) standard error of estimate; (c) analysis of variance table; (d) a regression coefficient, standard error and F level to remove, for all variables in the equation; (e) the tolerance, partial correlation coefficient, and F level to enter, for all variables not in the equation. The optional output from the program, given prior to performing the regression analysis, includes the means and standard deviation, a covariance matrix and a correlation matrix.

The regression program contains certain limitations on the use of independent variables in the development of predictive equations. The first limitation is that the program was designed primarily to accept quantitative variables, although qualitative variables may be used when a rank-order of importance is justified. A second limitation of the program was the suggestion that a minimal ratio of subjects to independent variables be at least 3 or 4 to 1.

Thus, because of the disproportionate number of independent teacher variables to the number of TMR teachers, it was necessary to restrict the number of teacher variables that could be used in the development of predictive formulae.

The procedure that was used in the selection of ten independent teacher variables was to enter all the available teacher variables into a multiple regression equation and to then select the variables listed in the first ten steps. Since there were 347 children and only 16 independent child variables, all available child variables were used in the regression analysis.

The following is a list of the teacher and child variables that were included as independent variables in the development of the regression formulae:

Teacher Variables:

(VI) Hours of outside preparation
(V2) EPPS Deference
(V3) EPPS Affiliation
(V4) EPPS Intraception
(V5) EPPS Nurturance
(V6) EPPS Change
(V7) EPPS Heterosexuality
(V8) EPPS Aggression
(V9) Pre SAQ score
(V10) Teacher CA

Child Variables:

(V11) Child IQ
(V12) Number of siblings older
(V13) Number of siblings younger
(V14) Father's occupational level
(V15) Father's educational level
(V16) Father's age
(V17) Mother's occupational level
(V18) Mother's educational level
(V19) Mother's age
(V20) Number of years enrolled in the program

(V21)	Total CL Administration 1
(V22)	CL Communications Administration 1
(V23)	CL Social Skills Administration 1
(V24)	CL Independence Administration 1
(V25)	CL Self Help Administration 1
(V26)	Child CA

In the development of a predictive equation based upon teacher variables, the dependent variable was designated as a teacher's class mean growth score. As previously discussed, this score was calculated between Administrations 1 and 3 on the CL. Similarily, the dependent variable designated in the development of a predictive equation for TMR children was a child's individual growth scores calculated between the same CL administrations.

The results obtained from the regression analyses are reported in the following manner: (a) regression analysis using teacher variables to predict class mean growth scores on the CL; (b) regression analysis using child variables to predict individual child growth scores; and (c) regression analysis using both teacher and child variables to predict individual child growth scores.

A summary of the results of a stepwise regression analysis using teacher variables to predict class mean growth scores is shown in Table 60. At the first step in the regression analysis, a teacher's subscale score accounted for 25% of the variance in predicting her class mean growth score. The addition of the teacher's chronological age increased the proportion of variance accounted for by another 15%. With the inclusion of five additional subscale scores from the EPPS, the proportion of variance accounted for reached 68%. The addition of teacher variables beyond the seventh step was not justified in that their effect on the amount of variance accounted for was only minimal.

The multiple linear regression equation at the seventh step in the analysis was:

$$Y = +2.10 (V7) -.05 (V10) +1.24 (V5) -1.59 (V6) +.90 (V4) +1.09 (V3) - 1.15 (V2) +25.67$$

TABLE 60

STEP BY STEP RESULTS OF REGRESSION ANALYSIS USING TEACHER VARIABLES TO PREDICT CLASS MEAN GROWTH SCORES

Step	Variable	Multiple R	R^2
1.	Heterosexuality *	.50	.25
2.	Teacher CA	.63	.40
3.	Nurturance *	.69	.47
4.	Change *	.74	.55
5.	Intraception *	.78	.61
6.	Affiliation *	.80	.64
7.	Deference *	.83	.68
8.	_PRE_ SAQ	.85	.72
9.	Hrs. Outside Prep.	.87	.75
10.	Aggression *	.88	.77

* Edwards Personal Preference Schedule Subscales

The above equation indicated the following relationship between a teacher's class mean growth score and her own characteristics: a teacher's mean growth score increased 2.10 units as her Heterosexuality score increased 1 unit; her mean growth score decreased .05 of a unit as her CA increased 1 unit; her mean growth score increased 1.24 units as her Nurturance score increased 1 unit; her mean growth score decreased 1.59 units as her Change score increased 1 unit; her mean growth score increased .90 of a unit as her Intraception score increased 1 unit; her mean growth score increased 1.09 units as her Affiliation score increased 1 unit; and her mean growth score decreased 1.15 units as her Deference score increased 1 unit. The regression equation developed at the seventh step in the analysis may be used to predict an individual teacher's class mean growth score by substituting the values of the teacher variables in the equation and performing the indicated calculations.

Table 61 contains a summary of a stepwise regression analysis using individual child variables to predict child growth score. At the first step in the regression analysis, the number of years a child was enrolled in the Wayne County Program, prior to 1965, accounted for only 4% of the variance in predicting a child's individual growth score. With the addition of the eight remaining independent variables the amount of variance accounted for increased to only 7%.

Since the percentage of variance that was accounted for when using child variables to predict a child's individual mean growth score was only minimal, the next logical step was to combine both teacher and child variables in an effort to improve the predictive ability of the equation.

Table 62 reports the results from a stepwise regression analysis in which both teacher and child variables were combined in an attempt to predict a child's individual growth score. At the first step in the regression analysis, the teacher's Heterosexuality subscale score accounted for 11% of the variance. The addition of the teachers' CA increased the amount of variance accounted for to 17%. With the addition of a teacher's Change, Nurturance and Intraception scores, the amount of variance accounted for increased to 28%. The

TABLE 61

STEP BY STEP RESULTS OF REGRESSION ANALYSIS USING CHILD VARIABLES TO PREDICT INDIVIDUAL CHILD GROWTH SCORES

Step	Variable	Multiple R	Multiple R^2
1.	No. Yrs. in Prog.	.19	.04
2.	Child's IQ	.24	.06
3.	Father's Occup.	.25	.07
4.	No. Sibs. Older	.26	.07
5.	Child's CA	.26	.07
6.	Mother's Age	.27	.07
7.	Father's Age	.27	.07
8.	Mother's Ed. Level	.27	.07
9.	Mother's Occup.	.27	.07

TABLE 62

STEP BY STEP REGRESSION ANALYSIS USING BOTH CHILD AND TEACHER VARIABLES TO PREDICT INDIVIDUAL CHILD GROWTH SCORES

Step	Variable	Multiple R	Multiple R^2
1.	Heterosexuality *	.34	.11
2.	Teacher CA	.41	.17
3.	Change *	.46	.21
4.	Nurturance *	.51	.26
5.	Intraception *	.53	.28
6.	Teacher Training	.54	.29
7.	Achievement *	.56	.31
8.	PRE SAQ	.57	.32
9.	Affiliation *	.58	.33
10.	Child's IQ	.59	.34
11.	Deference *	.59	.35
12.	No. Sib. Older	.60	.36
13.	Mother's Age	.61	.37
14.	Order *	.61	.37
15.	No. Yrs. Program	.61	.38
16.	Father's Age	.62	.38
17.	Total Yrs. Tchg. Exp.	.62	.38
18.	Child's CA	.62	.39
19.	Father's Ed. Level	.62	.39
20.	Yrs. Tchg. EMRs	.62	.39
21.	Aggression *	.62	.39
22.	Exhibition *	.63	.39
23.	Yrs. Tchg. TMRs	.63	.40
24.	Dominance *	.63	.40
25.	Endurance *	.63	.40
26.	Mother's Ed. Level	.64	.40
27.	Hrs. Outside Prep.	.64	.41
28.	Mother's Occup.	.64	.41

TABLE 62

STEP BY STEP REGRESSION ANALYSIS USING BOTH CHILD AND TEACHER VARIABLES TO PREDICT INDIVIDUAL CHILD GROWTH SCORES

Step	Variable	Multiple R	Multiple R^2
29.	No. Child. Tchr. Family	.64	.41
30.	Succorance *	.64	.41
31.	Autonomy *	.64	.41
32.	Abasement *	.64	.41
33.	PRE MTAI	.65	.42
34.	Tchr. Spouses Occup.	.65	.42

* Edwards Personal Preference Schedule Subscales

regression analysis continued for 29 additional steps, but the investigators felt that the increase in the amount of variance accounted for, beyond the fifth step, did not justify the inclusion of those variables in the predictive equation.

The multiple linear regression equation generated at the fifth step in the analysis was:

$$Y^1 = +2.23(V7) - .06(V10) - 1.62(V6) + 1.5(V5) + .80(V4) + 26.26$$

The above equation indicated the following relationship between a child's growth score and both teacher and child characteristics: a child's growth score increased 2.23 units as his teacher's Heterosexuality score increased 1 unit; a child's growth score decreased .06 units as his teacher's Change score increased 1 unit; a child's growth score increased 1.51 units as his teacher's Nurturance score increased 1 unit; and a child's growth score increased .80 of a unit as his teacher's Intraception score increased 1 unit. However, the child characteristics selected for this study displayed very little power in predicting pupil growth.

SUMMARY

The major intent of the present analysis was to explore the relationship between teacher and child characteristics and the growth scores of TMR children on the CL. Established as the primary purpose of the study was the investigation of high gain and low gain teacher and child groups to determine if there were any significant differences between the groups on a number of personal and demographic characteristics. A secondary purpose of the study was to investigate the predictive ability of teacher and child characteristics in an attempt to develop a number of multiple linear regression formulae to be used in predicting growth scores on the CL. In order to accomplish these purposes Analysis of Variance-Single Classification and Stepwise Regression Techniques were used.

A summary of the results from a number of analyses of variance between the high gain and low gain teacher groups indicated that the high gain group scored significantly higher than the low gain group on the Heterosexuality and Intraception subscales of the EPPS. No other significant differences were found between the two teacher groups on their professional experiences, biographical data, SAQ attitude scores, and 13 additional personality characteristics of the EPPS.

The results obtained from calculating a number of analyses of variance between the high gain and low gain child groups also revealed few significant differences between the two groups. After investigating the CA, IQ and pretest (status) scores on the CL and the four CL subscales, significant differences were found between the two groups, in that the high gain group scored significantly higher than the low gain group on initial CL Total Score, as well as Communication and Self Help subscale scores.

In addition, a number of Stepwise Regression analyses were performed on teacher and child characteristics, both individually and in combination. These analyses resulted in the development of two multiple linear regression equations that may be used in predicting a teacher's class mean growth score or a TMR child's individual growth score on the CL.

The first regression equation that was developed in the analyses involved the use of seven teacher characteristics in predicting a TMR class mean growth score between Administrations 1 and 3 on the CL. This equation was capable of accounting for 68% of the variance in that prediction. The results indicated that a teacher's Heterosexuality, Nurturance, Intraception and Affiliation scores on the EPPS were shown to be positively related; while a teacher's CA, Change and Deference scores on the EPPS were shown to be negatively related to a teacher's class mean growth score.

Although the attempt to use individual child characteristics to predict child growth scores on the CL resulted in an equation that accounted for only 7% of the variance in that prediction, a multiple linear regression equation was developed that accounted for 28% of the variance by combining both teacher and child characteristics into one equation. It may be noted that the five characteristics that were selected in this equation were the same five teacher characteristics that were selected in the initial steps of the above equation.

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SUMMARY AND CONCLUSIONS

SUMMARY AND CONCLUSIONS

The project explored the relationship between the training, experience, and selected characteristics of teachers and the progress of trainable mentally handicapped children attending a variety of programs. The study was exploratory in that no prevailing theory or empirical literature could be found which lead to an intensive study of specific teacher variables or combination of variables related to growth among trainable mentally retarded (TMR) children in special classes. It was hoped that more realistic criteria for training and certifying teachers of TMRs could result from the study of the relationship of different kinds of teacher training, experience, and personality characteristics of teachers to teaching effectiveness. The present study was developed to systematically explore the effectiveness of present practices.

A review of the literature indicated that although programs for TMR children and youth have become an integral part of public educational programs, a large group of unresolved problems still exist related to the training of these pupils in public school classes. Problems of curriculum, organization of classes, criteria for screening and selection of children, methods and materials, evaluation and financing have been identified and considered by practitioners in the field. It is generally agreed that an effective public school program for the TMR is dependent on achieving adequate financial support, appropriate physical facilities, a realistic curriculum plan and adequate, well trained teaching personnel.

While all of the above factors are vital to ultimate effectiveness of a school program for the TMR, it was concluded that no factors bear greater relationship to the degree of success attainable than the competency of teaching personnel. Nevertheless the literature revealed too little consideration of criteria for the selection and preparation of teaching personnel for classes of

TMR children, and too little research concerned with teacher effectiveness and the trainable mentally handicapped. A review of studies which surveyed characteristics of teachers actually in the field or entering the field in order to make a summary statement of existing teacher characteristics, and studies which surveyed the characteristics of teachers in the field and attempted to relate these to a measure of the teachers' success yielded very little objective information. As a result, reliable conclusions which might assist in selection and training of teacher candidates were not available.

As an initial step in the exploratory study of the relationship between the training, experience, and selected personality characteristics of teachers and the progress of TMR children, demographic data were collected and analyzed separately for samples of teachers of the TMR and TMR children from the Wayne County Schools, Michigan. Data obtained from a survey administered to a population of 86 teachers and 979 TMR children were subjected to an analysis involving a Statistical Problem Oriented Syntactic Encoder (SPOSE) program available through the University of Michigan Computing Center for the IBM 360; 67 Computer. The results of the major characteristics of the population are summarized below.

Teachers' Personal Characteristics

A majority of the teachers in the study were married and their spouses were employed either in a professional or technical occupation. A high percentage of the teachers indicated they had a preference for the teaching profession and that their decision to become a teacher was made prior to reaching the age of nineteen. The major reason given for their selection of teaching as a career was an interest in and a desire to work with children. In addition, a large percentage of the teachers indicated that they did not have any personal relationship, other than a classroom relationship, with retarded children.

Teachers' Professional Training and Experiences

Although most of the teachers in the study had received a college degree, over a fourth indicated they were not certified to teach. Generally, the teachers appeared to have only limited experiences with the type of children they were teaching, in that a large percentage had not received student teaching experiences with retarded children and had taught TMR children for two years or less. On the other hand, over half of the teachers had teaching experience with normal or regular children.

Teachers' Opinions and Perceptions

A majority of the 86 teachers stated a preference for teaching TMR children at the pre-school through elementary levels and felt they were particularly disturbed by the behavior problems and lack of responses from the children. The information available on the greatest assets and shortcomings of a TMR teacher indicated that the possession of patience, calmness and a sense of humor were viewed as the greatest assets; while a lack of patience, frustration, loss of one's temper, lack of objectivity, and over-expectations regarding pupil progress were viewed as the greatest shortcomings.

Teachers' Selections of Goals for TMR Children

During the beginning of the study, and again at its conclusion, all teachers were requested to indicate the goals they hoped to achieve with their TMR children. A comparison of the pre- and postgoals revealed that the teachers emphasized the development of social skills abilities throughout the two year period. An analysis of the rank-order of pre- and postgoal selections has indicated a change in the type of goals that were emphasized during the study. During the pregoal period the teachers emphasized the development of independence, emotional maturity, cognitive development, and academic skills, whereas, during the postgoal period the teachers emphasized the development of leisure-time activities, motor and sensory development, personal appearance and home, life and community responsibilities.

Pupils' Personal Characteristics

A summary of the information obtained on the 979 TMR pupils revealed that the highest percentage of pupils in the 40-49 IQ range were judged as capable of performing intelligible speech. An analysis of the percentage distribution of the types of deficits in the total population indicated a higher percentage of Mongoloid pupils, as compared to pupils whom teachers described as brain injured. The largest percentage of the pupils were enrolled in Wayne County Programs for two years or less, prior to the beginning of the study.

Family Characteristics of TMR Pupils

An analysis of the survey data on the family characteristics of the TMR pupils revealed that over half of the population indicated that there were no other retarded children in their immediate family. Although the demographic information that was received on the parents of the TMR pupils was incomplete, an analysis of the available data indicated that the highest percentage of mothers were housewives and that the highest percentage of fathers were employed as factory workers, laborers, craftsmen or foremen. The highest percentage of mothers and fathers were in the 30 to 49 age range.

Best and Least-Liked Characteristics of TMR Children

During the study all classroom teachers were required to list three best-liked and three least-liked characteristics for each TMR child in their classes. These responses were then subjected to an item analysis and information on the best and least-liked characteristics of TMR pupils was obtained. The results indicated that classroom teachers tended to regard the goals of social skills and emotional maturity as the best-liked characteristics for both male and female TMR pupils.

COMPUTER SEARCH FOR GROUP DIFFERENCES

The second step in the exploratory study involved the systematic use of the computer to examine the myriad of teacher characteristics in order to hypothesize those variables that had the highest probability of being associated with growth of TMR children in special classes. A new computer program devised at the University of Michigan and entitled "Computer Search for Group Differences" was used for this purpose. The search procedure is conceptualized as a hypothesis generator since the characteristics identified by the computer can be used in a more intensive exploration of other samples. The group differences program represents a new approach in the analysis of data resulting from atheoretical exploratory research in that there is no attempt to directly test hypotheses, but rather to generate heuristic hypotheses for further investigation.

A large pool of teacher variables relating to teacher attitude, personality, and biographical information was obtained by administering the Minnesota Teacher Attitude Inventory (MTAI), the Student Attitude Questionnaire (SAQ), the Edwards Personality Preference Schedule (EPPS) and a Teacher Information Form (TIF) to all the teachers of TMR children involved in the study.

Pupil growth was determined by administering the Cain Levine Social Competency Scale (CL) to the TMR pupils in the study. The CL was composed of a total score and four subscale scores pertaining to communication, social skills, initiative, and self-help. An attempt was made to select characteristics of teachers which were associated with total growth in social competency as well as each of the subscale scores. The CL was administered three times over the period of the study. Comparisons were made between CL1, CL2, and CL3 to determine individual and class growth in social competency.

Groups of teachers were selected by examining the class mean percentage gain scores on the CL. Class mean gain scores were calculated for total score as well as the four subscale scores over CL1, CL2, and CL3. Teachers whose students showed high gain on the CL constituted one group of teachers and teachers whose students showed low gain on the CL made up another group of teachers. Separate groups of teachers were established for the different CL totals and subscales over the three CL administrations.

The goal of the computer search was to select from among the pool of teacher variables the single characteristics or those variables in combinations of twos or threes which best discriminated between teachers whose students showed high or low gain on the same aspect of the CL.

The results of the computer search program are summarized as follows: (a) student mean percentage gain on CL total score, pages 110-128, (b) student mean percentage gain on CL communication score, pages 140-155, (c) student mean percentage gain on CL social skills score, pages 186-194, (d) student mean percentage gain on CL initiative score, pages 218-226, (e) student mean percentage gain on self help score, pages 249-268.

The computer search for group differences was thus used toward the reduction of the number of characteristics in the data pool to only those which appeared to have a significant relationship to pupil growth of TMR children. At the end of this second stage of exploratory data analysis, the experimenters were encouraged by the large number of specific variables and combinations of variables selected by the computer program as possibly being associated with pupil growth of TMR children when measured by the various scales of the CL.

The initial exploratory procedures (that is, the SPOSE and Group Differences Programs) were considered a natural consequence of the data selected in the study. Originally as much data as possible were collected on both teachers and children. Since this strategy resulted in a large data mass, it was necessary as a next step to employ statistical procedures to refine the data pool. For this reason a cluster analysis of teacher and pupil variables was chosen as the third logical step in the exploratory study.

CLUSTER ANALYSIS OF TEACHER AND PUPIL VARIABLES

Cluster analysis is a relatively recent methodology employing the computer. Its purpose is to cluster individuals into homogeneous groups based on data collected by questionnaires, psychological tests, rating scales, etc. The clustering model is most effective in identifying those individuals who have certain attributes of interest in common with others as well as finding the individuals who apparently cannot be associated with any other individuals from among those in the sample being studied.

In the current study, the teacher clusters were to be determined from demographic information, test and rating data on teachers. The investigators had hoped to determine whether the difference in TMR pupil growth as measured by the CL could be accounted for by the different types of teachers classified by the cluster analysis program. The TMR children were also to be clustered by such variables as chronological age, intelligence score, and socio-economic status that might possibly affect their status and growth, providing teacher clusters could be found. In addition, the authors had hoped to demonstrate an interaction between TMR and teacher characteristics and pupil growth. A set of 23 teacher variables which satisfied the requirements of the clustering model was submitted to the computer for analysis.

The results indicated that based upon the variables used there were no distinct clusters of teachers within the sample of 38 teachers studied. Based on these results it would appear that the 23 variables failed to discriminate between the teachers with respect to pupil growth. The teachers were thus too homogeneous a group with respect to these variables. As a result the difference in growth of the TMR children could not be accounted for by different types of teachers classified by cluster analysis.

The results were surprising in that the set of 23 variables included the fifteen personality characteristics measured by the EPPS, the total score on the S.A.Q., the raw score on the MTAI and other teacher variables which would be expected to discriminate between teachers (e.g., teachers' educational training, hours per week the teacher felt an average teacher should spend in outside preparation for class, total years teaching experience).

Multiple Discriminant Analysis of Teacher and Pupil Variables

Since the clustering program did not reveal any significant clusters among teachers, the investigators expected no unique clusters would be found among the TMR children. Instead it was decided that a multiple discriminant analysis of both teacher and pupil data would be a more fruitful exploratory analysis of the data. For this reason a stepwise multiple discriminant analysis was employed as a fourth step in the exploratory study. A multiple discriminant analysis employing the computer makes possible the screening of large masses of data in search for patterns of responses that discriminate or classify groups of subjects on the various dependent variables. The purpose of this analysis was to determine what combinations of teacher and pupil variables could best classify TMR individuals into high and low percentage gainers (HPG or LPG) on the total score of the CL over the first and third administrations of the test.

Two stepwise multiple discriminant analyses were performed on the data. The first discriminant analysis contained a variable set of 16 pupil variables which were chosen by the experimenters as having possible discriminatory power. The second discriminant analysis contained a variable set of nine variables which were selected by the experimenters and by the Group Differences Program as important teacher training variables. The aim was to investigate the discriminatory power of significant teacher training variables. Data was collected on 300 children and 38 teachers. The respective 38 classes were ranked into a high or low percentage gain (HPG or LPG) group on the basis of the median mean percentage gain score of the total 38 classes.

With respect to the pupil variables, the output of the computer program indicated that of the 16 variables, only 4 (i.e., number of years a child had been in the present program, CL - Self Help Score, number of older siblings in the family and age of father), possessed discriminatory power. The HPG subjects had spent more years in the present program, had higher scores on Self Help Scale of the CL during administration one, more older siblings and younger fathers than the LPG subjects. These four variables were able to correctly classify approximately 67% of all pupils into their respective percentage gain group. However, 33% of the pupils were disclassified when classification was based on these four variables. It is significant to note that IQ (Stanford-Binet), chronological age, parent's occupational and educational level and mother's chronological age were among the pupil variables which did not possess significant discriminatory power for classifying the three hundred pupils into their respective pupil gain groups.

With respect to the nine teacher variables, the output of the computer program indicated that none of the chosen teacher training variables possessed adequate discriminatory power to correctly classify the 38 classes into HPG or LPG groups. The two groups of teachers (i.e., teachers whose classes ranked in the HPG or LPG group), were thus too similar on each of the nine teacher training variables. The reader will notice that a similar finding was obtained from the cluster analysis program using a different set of teacher variables. These results were surprising in that the set of teacher variables included those teacher training variables which were selected by the Group Differences Program and which on an a priori basis would be expected to be related to teacher effectiveness as measured by TMR pupil progress in special classes (e.g., educational training, student teaching experience with mentally retarded and other special education groups, number of years teaching trainable and educable mentally retarded and normal children, total years student and regular teaching experience and teacher age).

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In general, it may be concluded that the vast majority of teacher and pupil variables investigated in the multiple discriminant analyses possessed relatively little discriminatory power for correctly classifying either pupils or classes. The investigators decided therefore, that it would be appropriate as a next stage in the exploratory analysis of the teacher and pupil data to focus on single variables in an attempt to discover significant predictors of growth scores for both teachers and children.

Multiple Linear Regression of Teacher and Pupil Variables

The fifth empirical step in the exploratory study employed analysis of variance and stepwise regression of teacher and child characteristics. These analyses were performed in order to determine the following: (a) that there were differences between the means of the pupil growth scores of teacher and child groups on a variety of personality and professional characteristics; and (b) to determine if specific teacher and child variables might be isolated and used to predict teacher success through a multiple linear regression formula. In this analysis 38 teachers and 347 TMR children were dichotomized into high and low pupil gain groups, (i.e., HPG, LPG).

A summary of the analyses of variance between the two teacher groups on professional teaching experiences indicated that the HPG and LPG teacher groups did not differ in such professional teaching experiences as the number of years of teaching TMR children, EMR children, normal children, or the total number of years of teaching experience. The reader will again notice the similarity of these findings to those obtained in the preceding multiple discriminant analysis.

The results of analyses of variance between HPG and LPG teacher groups on chronological age and teacher attitudes indicated no significant differences between the two teacher groups on their mean chronological age or teacher attitudes as measured by the Minnesota Teacher Attitude Inventory and the Student Attitude Questionnaire. These results are consistent with those obtained in the cluster analysis program described previously.

A summary of the results of the analyses of variance between the two teacher groups on the 15 personality characteristics on the Edwards Personal Preference Schedule revealed that the HPG group scored significantly higher than the low gain group on the Heterosexuality and Intraception subscale of the EPPS. However, no significant differences were found between the two groups on the 13 remaining subscales of the EPPS. The clinical implications of the significant findings regarding the Heterosexuality and Intraception subscales must be investigated further before any definite conclusions can be formulated.

The results obtained from calculating a number of analyses of variance between the HPG and LPG child groups also revealed few significant differences between the two groups. After investigating the CA, IQ and pretest (status) scores on the CL and the four CL subscales, significant differences were found between the two groups, in that the high gain group scored significantly higher than the low gain group on initial CL Total Score, as well as Communication and Self Help subscale scores.

The first regression equation that was developed in the stepwise regression analyses involved the use of seven teacher characteristics in predicting a TMR class mean growth score between administrations one and three on the CL. This equation was capable of accounting for 68% of the variance in that prediction. However, approximately one-third of the variance remains unaccounted for by this equation. The results indicated that a teacher's Heterosexuality, Nurturance, Intraception and Affiliation scores on the EPPS were shown to be positively related, while a teacher's CA, Change, and Deference scores on the EPPS were shown to be negatively related to a teacher's class mean growth score. The addition of teacher variables beyond the seventh step was not justified in that their effect on the amount of variance accounted for was only minimal.

An attempt to use 16 individual child characteristics to predict child growth scores on the CL resulted in an equation that accounted for only 7% of the variance in that prediction. Since the percentage of variance that was accounted for when using child variables to predict a child's individual mean growth score was only minimal, the next logical step was to combine both teacher and child variables in an attempt to improve the predictable ability of the equation. This procedure resulted in a linear regression equation that accounted for only 28% of the variance. In addition, the five characteristics selected in this equation were the same five teacher characteristics selected in the initial steps of the first linear regression equation. In essence, the child characteristics selected for this study displayed very little power in predicting pupil growth.

An intensive sub-study (see related studies #   3   ) examined the relationship of teacher morale of pupil growth in TMR classrooms. The most significant aspect of the findings was that results presented no evidence to indicate that teachers whose students showed more gain in social competency had higher teacher morale. It would seem logical to assume from these results that variables other than teacher morale are more related to pupil gain in social competency.

Flanders (1969) review of research in teaching effectiveness in general education published between 1960 - '66 should be noted. This review indicated that attempts to find a predictor of teacher effectiveness through field correlation studies similar to the present investigation are most unrewarding and not likely to contribute to our knowledge of effective teaching.

In general, therefore, it may be concluded that the results of the statistical procedures employed in this study indicated that the vast majority of training, experience, and selected personality characteristics of teachers, were unrelated to pupil growth of TMR as measured by the CL.

It should be recognized that the mass of data collected from the 86 teachers and 979 children, could not have been examined previously to the finite degree utilized in this study since the research methodology employed the most innovative computerized techniques in data analysis available today. The intensive exploration of the data mass was only possible, due to the amazing speed and flexibility of the IBM 360:67 computer. Future educational research, involving the screening of large masses of data, should only be attempted where a large computer is readily available. For example, either of the cluster, discriminant and regression analyses, would have required months of tedious work on a desk calculator.

In the light of the present day concerns for professional training of teachers of the TMR, the general nonsignificant results achieved in the Wayne County study came as somewhat of a surprise. The results suggest that educational training, practice teaching and teaching experience with TMR's, and teacher chronological age demonstrate little or no relationship to the progress of TMR children. In addition a post hoc examination of HPG and LPG teachers revealed that their certification and approval to teach the retarded in Michigan was the same. Similarly, a sub-test of this project which examined the relationship between supervisor ratings of teachers who work with TMR children and social competency growth of TMR children within the classroom did not support the hypothesis that supervisor ratings are higher for teachers whose TMR students show greater gain in social competency. This may be due to the fact supervisors may not see as desirable, the traits and techniques necessary to bring about social competency growth in TMR children or do not know how to properly evaluate teachers of TMR children.

In view of the results of the study it appears, therefore, that present day preparation of teachers to work with TMR children requires innovative approaches. In a recent review of teacher education programs in special education Semmel et al, (1968) found that systematic research on training teachers of the mentally retarded is almost non-existant. In addition, they found relatively few attempts at systematically improving teacher education programs in special education. Furthermore teacher training programs generally lacked specificity about their behavioral objectives and procedures.

It seems apparent from the Wayne County study, that what occurs between the teacher and child is the primary factor in the progress of the TMR, rather than present day teacher training, personality characteristics, and professional experience of the teachers. (Heterosexuality and intraception as measured by EPPS in this study, may prove the exception to these conclusions). The frequency with which heterosexuality and intraception showed in the analyses of teacher characteristics may be significant factors. It appears to the writers, however, that these two areas require systematic clinical study before it is possible to state what their frequency may indicate.

It had been hoped that analysis of the findings would lead to principles or guidelines for teacher selection. The results indicate that previous experiences and personality characteristics of present teachers in Wayne County are generally unrelated to teacher effectiveness with TMR pupils. Wayne County experience, however has caused some characteristics to be sought in teacher candidates. These include: an alert mind, physical stamina and an active rather than passive way of functioning, flexibility with a built-in sensitivity to individual and group behavior necessitating activity or room climate change, an objective approach to teaching, an overt interest in people and many phases of living with a full and satisfying life in which teaching the TMR is one part.

One promising approach to the formulation of innovative teacher preparation programs involves the investigation of teacher-pupil interaction of the teaching process as it occurs in the classroom. According to Amidon and Hough (1967) "of the recently developed systems for analyzing the instructional process, interaction analysis is the one that is currently best known and most widely used."[1] Interaction analysis is a system for objectively observing and coding the verbal and non-verbal interchange between teachers and pupils. The use of interaction analysis systems in the field of special education is practically unknown while in general education several categorical systems for measuring classroom interaction have been developed and have shown great potential as a teacher training technique. (Amidon, Hough, 1967).

One sub-study (see related studies # two) of this project dealing with interaction analysis compared the interaction patterns for fourteen classrooms in which the students showed high or low gain on the communication sub-scale of CL. The results indicated substantiation for the hypothesis that the interaction patterns for HPG teachers differed significantly from the interaction patterns of the LPG teachers. HPG teachers were more expansibe and indirect in their activities within the classroom, while LPG teachers were significantly more restrictive and direct in their interaction within the classroom. Thus the teaching style of the LPG teachers tended to discourage the child's initiative in making verbal statements. (Expansive activity is the percentage of verbal classroom interactions in which the teacher accepts student feelings, praises students, or uses student ideas. Restrictive activity refers to the percentage of time the teacher gives directions, criticizes or justifies his authority).

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[1] Reader is referred to collection of readings by Amidon and Hough (1967) for a thorough review of the theory, research and applications pertaining to interaction analysis.

A fruitful line of research would be to establish a system of training teachers which assisted them in interacting meaningfully with their TMR pupils. This could be accomplished by providing teachers, either in an inservice or preservice situation, with sufficient feedback pertaining to their performance in the classroom. It would then be possible for them to systematically modify their teaching behavior in the direction of the established goals of the particular TMR program. One possible system for accomplishing the foregoing is presently undergoing empirical study.

Semmel and his associates at the University of Michigan have developed a Computer Assisted Teacher Training System (CATTS). "When CATTS is operational it should be applicable to any training situation in which:

> a. the interaction of teachers and pupils is to be summarized in terms of any system composed of behavior categories;
>
> b. the summarized and analyzed data are to be fed back immediately to the teacher in the classroom through a meaningful display.
>
> c. the behavior, once coded, summarized and analyzed by computer, is to be instantaneously stored for quick retrieval later." (Semmel, 1968, P. 6)

In addition future research should focus on the development of a coding system which measures the interaction or teaching learning process within the TMR classroom since this interaction is different from the interaction in an EMR or regular classroom. No system of classroom analysis among those systems reviewed by Semmel et al drew upon an analysis of special educational techniques so as to incorporate the specific characteristics of the pupils into the system.

The implementation of one innovative model for pre and in-serivce educational training of teachers of the TMR is planned for Wayne County. This training program as planned will have the ingredients necessary to appropriate programming for TMR and will also provide immediate feed-back of the classroom interaction for the teacher. The training will utilize a computerized system for the feed-back and communication skill in combination with chronological age for the initial grouping of the TMR students. A description of this grouping process on the basis of a checklist for evaluating the progress of the TMR child in relation to the goals indicated through the grouping process, and the diagnostic profile which summarizes the year's achievement may be found in Appendix I.

In conclusion; it is the hope of the investigators that they may have stimulated other researchers and practitioners to continue in these areas.

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RELATED STUDIES

PART II

THIS SECTION REPORTS SIX SUB-STUDIES WHICH UTILIZED THE PRESENT SAMPLE OF WAYNE COUNTY TEACHERS AND TMR CHILDREN. THESE STUDIES ARE INTENSIVE EXAMINATIONS OF OTHER FACTORS RELATED TO THE TOTAL STUDY.

RELATED STUDY 1

THE RELATIONSHIP OF VERBAL COMMUNICATION IN TMR CLASSROOMS TO PUPIL GROWTH*

TEACHER ATTITUDE AND TEACHER-PUPIL VERBAL INTERACTION PATTERNS IN THE TMR CLASSROOM

The efficacy of special classes for trainable mentally retarded (TMR) children has been the subject of considerable research (Goldstein, 1956; Guenther, 1956; Johnson and Capobianco, 1957; Hottel, 1958; Peck, 1960; Cain and Levine, 1961). These studies have generally revealed inconclusive results. One plausible explanation for the null findings is that most efficacy studies did not directly consider the variance among teacher behaviors within the experimental groups. The heterogeneity of special class programs suggests the need for research on the specific teacher characteristics and patterns of pedagogical activity within these programs.

Hudson (1960) focused on the teaching methods used within special classes for the TMR. Her observational methods, while adequate for delineating types of techniques used in special classes, were not designed to quantify these variables. Hurley (1967) has recently reported an interesting approach to the study of pupil and teacher verbal behavior within classes for the educable retarded.

A number of investigators have attempted to classify and quantify teacher and student verbal behavior within the regular classroom. Anderson and Brewer (1946) classified teacher and student behavior into dominative and integrative activities. They found a high correlation between verbal behavior of teachers and their pupils. Withall (1949); Medley, Mitzel and Rabinowitz (1959) and others elaborated on the observer systems and described methods for determining observer reliability.

Flanders (1960) built upon earlier work and developed a set of ten categories and a method for noting consecutive communication events through entries in a ten-by-ten matrix. His system of verbal Interaction Analysis was used by Davies (1961) to delineate two groups of secondary school teachers along a continuum of indirectness of teaching style. Davies compared the scores of the groups on the Minnesota Teacher Attitude Inventory (MTAI) and found no significant differences. However, she felt selective factors were operating, and suggested further research on the problem.

The present study used Flander's Interaction Analysis technique to investigate the relationship between the verbal behavior of teachers and TMR children in the public schools and teacher attitudes as measured by the MTAI. It was expected that a group of teachers with high scores on the MTAI would be more indirect in their influence, thereby increasing students' participation and freedom of action. High MTAI teachers were expected to use more statements indicating the acceptance of students' feelings, praise, acceptance of students' ideas, and asking questions of students than a group of teachers with lower scores on the MTAI. It was predicted that the low MTAI group of teachers would be more direct in their influence, thereby limiting student participation and freedom of action, with more teacher statements consisting of lecture, giving directions and criticism than the high MTAI teacher group. Finally, it was predicted that the verbal behavior within the high MTAI teachers' classrooms would reveal a higher percentage of student talk, including both teacher-initiated student talk and pupil-initiated talk, than the MTAI teachers' classrooms.

METHOD

Sample. MTAI tests were administered to a population of 87 public school teachers of the traibable mentally-retarded. Seven teachers were chosen from each extreme of the distribution of teacher scores to make up the high and low MTAI groups. Table 62A presents the characteristics of the teachers and pupils used in this study.

The teachers in both groups reported that all children in their classes understood language. Two children in the high MTAI teachers' classes could not speak, whereas three children in the low MTAI teachers' classes could not speak.

Instruments. Flanders' system of Interaction Analysis was used to record the verbal interaction which took place between the teacher and students within respective classrooms. The system classifies verbal interaction into ten categories (a list and description of the categories can be found in Table 63). The first seven categories

TABLE 62A

CHARACTERISTICS OF PUPILS AND TEACHERS*

Variable		High MTAI Group	Low MTAI Group
MTAI Raw Score	Mean	87.29	-13.71
	SD	12.81	14.33
Years Teaching Experience	Mean	6.85	14.26
	SD	5.87	8.90
Class Size	Mean	13.29	11.86
	SD	1.87	2.55
Age of Pupils	Mean (mos.)	140.63	147.35
	SD	38.25	34.12
I.Q. of Pupils	Mean	43.59	44.36
	SD	11.43	8.87
Academic Degrees Teachers:			
Bachelors	N	5	6
Masters		2	1

*Note - There were 7 female teachers in each group.

TABLE 63

CATEGORIES FOR INTERACTION ANALYSIS**

TEACHER TALK*	1.	ACCEPTS FEELING: accepts and clarifies the feeling tone of the students in a non-threatening manner. Feelings may be positive or negative. Predicting or recalling feelings are included.
	2.	PRAISES OR ENCOURAGES: praises or encourages student action or behavior; jokes that release tension, but not at the expense of another individual; nodding head, or saying "um hm?" or "go on" are included.
	3.	ACCEPTS OR USES IDEAS OF STUDENTS: clarifying, building, or developing ideas suggested by a student, as teacher brings more of his own ideas into play; shift to category five.
	4.	ASK QUESTIONS: asking a question about content or procedure with the intent that a student answer.
	5.	LECTURING: giving facts or opinions about content or procedures; expressing his own ideas; asking rhetorical questions.
	6.	GIVING DIRECTIONS: directions, commands, or orders to which a student is expected to comply.
	7.	CRITICIZING OR JUSTIFYING AUTHORITY: statements intended to change student behavior from non-acceptable to acceptable pattern; bawling someone out; stating why the teacher is doing what he is doing; extreme self-reference.

TABLE 63

CATEGORIES FOR INTERACTION ANALYSIS**

STUDENT TALK*	8.	STUDENT TALK - RESPONSE: talk by students in response to teacher. Teacher initiates the contact or solicits student statement.
	9.	STUDENT TALK - INITIATION: talk by students which they initiate. If "calling on" student is only to indicate who may talk next, observer must decide whether student wanted to talk. If he did, use this category.
	10.	SILENCE OR CONFUSION: pauses, short periods of silence and periods of confusion in which communication cannot be understood by the observer.

*There is NO scale implied by these numbers. Each number is classificatory; it designates a particular kind of communication event. To write these numbers down during observation is to enumerate, not to judge a position on a scale.

**From Interaction Analysis in the Classroom - A manual for observers - by Dr. Ned A. Flanders, 1964.

comprise the total teacher verbalization in the classroom. The first four categories refer to indirect teacher influence since they expand student participation and freedom of action, whereas categories five, six and seven represent direct teacher influence since they limit student participation and freedom of action. Categories eight and nine represent student talk in the classroom interaction process. Category ten is used to record pauses, short periods of silence, or periods of confusion when communication cannot be understood by the observer.

An observer trained in the technique of Interaction Analysis sits in the classroom and in three-second intervals records the category number for the communication event observed. After a standard observation period is completed, the numbers recorded are plotted on a ten-by-ten matrix which lists the Interaction Analysis categories horizontally and vertically. When a matrix is completed, it shows the loadings of the categories and reveals the pattern of verbal interaction taking place for that particular classroom during the time observed.

The MTAI was also used in this investigation. It is a standardized paper and pencil test designed to "measure those attitudes of a teacher which. . . predict how well the teacher gets along with pupils in interpersonal relationships" (Cook, et al, 1952). The MTAI is designed to show high scores for those teachers with attitudes which are expected to lead to flexibility and harmony in the classroom, and to show low scores for those teachers whose attitudes are expected to lead to a more rigid and autocratic classroom. The test results in a total score which may range from -150 to +150.

Procedure. Three graduate students at the University of Michigan were trained in the Interaction Analysis technique for the study. After an initial period using training tapes and manuscripts of selected classroom situations, the observers began a series of practice sessions in TMR classrooms. After each practice session, the observers discussed their differences in categorization. At several points during the training, a reliability coefficient was computed. The final ratings computed prior to the study were .87 for observers A and B, .70 for observers B and C, and .75 for observers A and C.

RESULTS AND DISCUSSION

The observation tallies were analyzed using a Fortran program on the IBM 360:67 computer (Wrightman, 1961). A matrix for each teacher and summed matrices for the two experimental groups were compiled.

Table 64 presents the percentage of tallies in each category of verbal interaction for the high and low MTAI teachers. Categories one through nine represent the total verbal interaction in the classroom. Teacher talk includes categories one through seven which represented 74.22 percent of the total verbal interaction for the high MTAI group and 71.48 percent for the low MTAI group. The difference was not significant.

Table 65 presents the mean percentage in each category of teacher statements in the high and low MTAI groups. There are two methods for comparing the percentages across categories in terms of direct and indirect teacher statements (Flanders, 1966). First is the total I/D ratio which is found by taking the sum of the percentages in categories one, two, three and four and dividing by the sum of the percentages of categories five, six and seven. The total I/D ratio found in the high MTAI group was .74 and in the low MTAI group .56. The difference, .18, was significant (p.01). That is, the high MTAI group was significantly more indirect than the low MTAI group, using the total I/D ratio. However, Flanders (1965) suggests that the total I/D ratio, including categories four and five, may not be as sensitive as the revised I/D ratio which excludes the content categories four and five. The revised I/D ratio for the high MTAI group was .54 and for the low MTAI group .57. The difference, .04, was not significant. These results imply that teacher attitudes, as measured by the MTAI, are not reflected in definite direct and indirect verbal patterns.

TABLE 64

MEAN PERCENTAGE IN EACH CATEGORY OF INTERACTION ANALYSIS FOR HIGH AND LOW MTAI GROUPS

	Accepts Feeling 1	Praise 2	Accepts Ideas 3	Questions 4	Lecture 5	Directions 6	Criticism 7	Student Response 8	Student Initiated 9	Silence or Confusion 10
High MTAI Mean	.06	2.69	6.65	12.95	11.93	14.69	2.61	13.25	5.03	30.13
SD	.06	.80	2.50	4.77	3.28	2.98	1.22	3.11	2.46	10.58
Low MTAI Mean	.06	3.54	6.57	7.90	15.07	14.06	3.91	9.91	8.51	30.47
SD	.06	1.70	2.98	2.57	7.33	4.52	2.17	6.46	4.21	10.71
Mean Diff.	.00	.85	.08	5.05	3.14	.63	1.30	3.34	3.48	.34

TABLE 65

MEAN PERCENTAGE IN EACH CATEGORY OF TEACHER STATEMENTS IN HIGH AND LOW MTAI GROUPS

	1 Accepts Feeling	2 Praise	3 Accepts Ideas	4 Asks Questions	5 Lecture	6 Gives Directions	7 Criticism
High MTAI Mean	.11	5.31	12.64	24.59	25.37	28.68	5.21
SD	.11	1.68	3.64	7.09	7.42	5.79	2.72
Low MTAI Mean	.13	7.40	12.72	15.38	28.75	28.11	7.51
SD	.14	4.22	4.13	3.90	8.60	8.46	3.78
Mean Differences	.02	2.09	.08	9.21 **	5.30 *	.57	2.30 *

* Significant at .05 level
** Significant at .01 level

Inspection of the categories for the high and low MTAI groups reveals that categories four, five and seven had the largest differences. Category four, *asking questions,* was used significantly more by the high MTAI teachers ($p < .01$), while category five, *lecture*, and category seven, *criticism*, were used significantly more by the low MTAI group ($p < .05$). The higher percentage of category four, *asking questions*, found in the high MTAI teachers, did lend some support to the greater indirectness of this group. None of the other category differences were significant between the two groups. However, categories one (*accepting feeling*), two (praise), and three (*using ideas*), which refer to indirect influence, showed greater percentages for the low MTAI teachers, and category six, *giving directions,* which refers to direct teacher influence, showed a slightly higher percentage for the high MTAI teachers. The direction of the differences in percentages between these categories, while not significant was in opposition to the expectation that high MTAI teachers would use less direct teacher-statements than the low MTAI teachers. Student talk includes categories eight and nine, which represented 25.88 percent of the total verbal interaction in the high MTAI group and 27.66 percent in the low MTAI group. Again this difference was not significant.

Table 66 presents the type of student statements as a percentage of the total verbal interaction in high and low MTAI groups. The students in the high MTAI teachers' classrooms used category eight significantly more frequently ($p < .05$) than the students in the low MTAI teachers' classrooms. However, category nine was used significantly more often by the students in the low MTAI teachers' classroom ($p < .01$). These results did not support the expectation that there would be more student talk in the high MTAI teachers' classrooms.

Although they had more teacher-initiated talk(category eight), the low MTAI teachers' classrooms had more pupil-initiated talk (category nine). The explanation of this result is not apparent. It may be that the pupils in the two groups were not equivalent in degree of verbal ability.

Figure 10 presents a histogram comparing data from the total sample of the present study with that obtained from an earlier

TABLE 66
MEAN PERCENTAGE OF EACH CATEGORY OF STUDENT STATEMENTS BASED ON TOTAL VERBAL INTERACTION (Cat. 1-9) IN HIGH AND LOW MTAI GROUPS

	8 Student Response	9 Student Initiated
High MTAI Mean	18.80	7.08
SD	3.30	2.73
Low MTAI Mean	14.88	12.78
SD	6.80	7.03
Mean Difference	4.30*	5.20 **

* Significant at .05 level
** Significant at .01 level

PERCENTAGE IN EACH CATEGORY OF INTERACTION ANALYSIS IN NORMAL, EMR, AND TMR CLASSROOMS

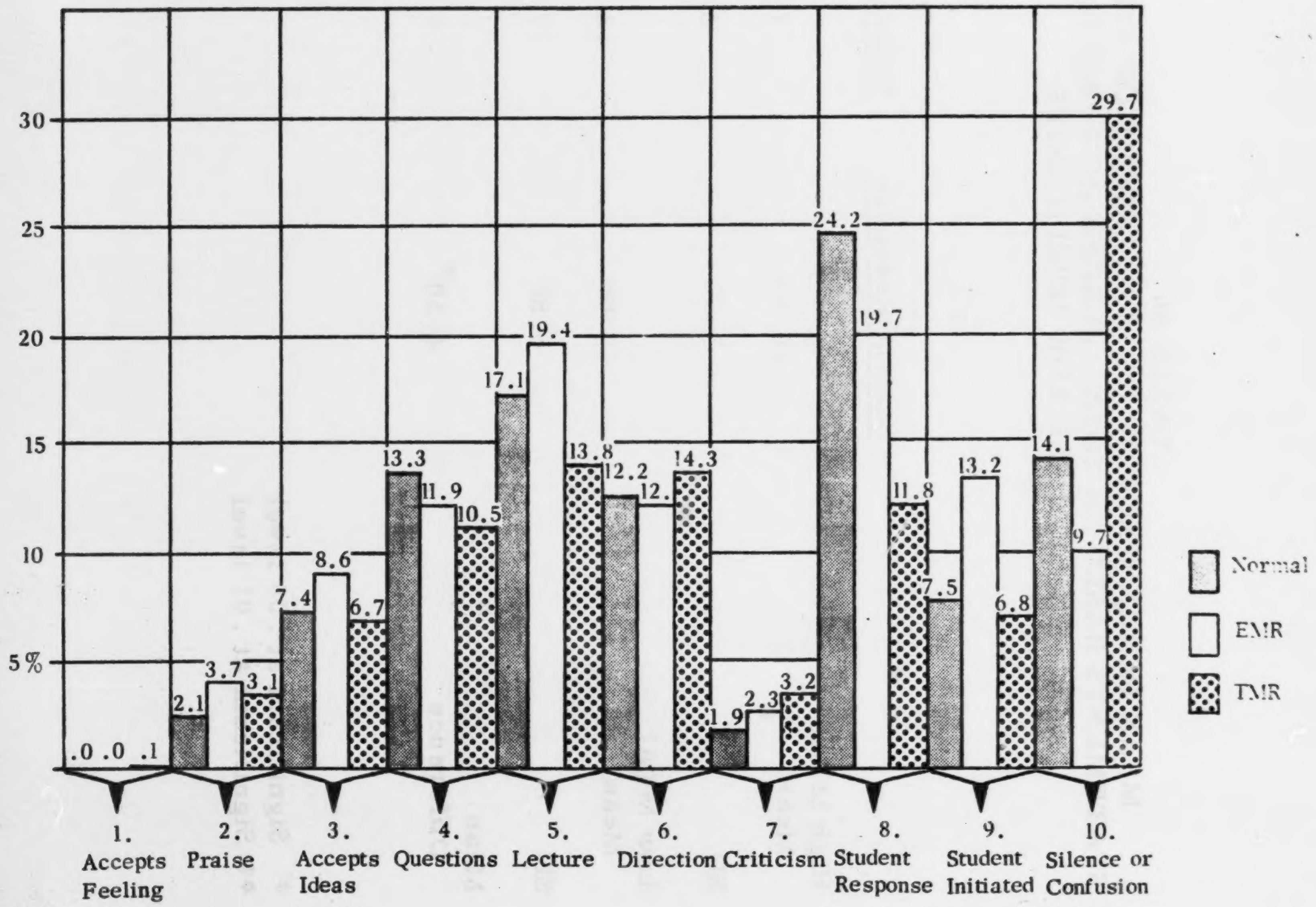

Figure 10

pilot study (Semmel, Herzog, and Jorgensen, 1965), using educable mentally-retarded (EMR) and normal subjects in regular and special classes. With the understanding that the comparability of the data in Figure 10 is questionable, it is, nevertheless, of interest to note trends which might furnish meaningful hypotheses for future research. When regular classes, EMR classes, and TMR classes are compared, the greatest differences can be found in categories five, lecture; eight, student responses; nine, student-initiated talk; and ten, silence or confusion. Examination of category five in Figure 10 reveals that EMR teachers made the greatest use of lecture and TMR teachers the least, with teachers of normal children falling in between. Category eight indicates that student response may be a function of intelligence, with normals responding most and TMR's least. Category nine shows that more student statements are initiated in EMR classrooms than either normal or TMR classes. Perhaps, an explanation may be sought in the degree of structure in these classes. Category ten shows TMR classes to have relatively more silence and confusion than regular or EMR classes. Further studies might find it useful to break down category ten into meaningful silence, such as sear work, and confusion. The general nature of the category obscures its implications.

Comparisons such as those based on verbal interaction may indicate the nature of the individual differences in pedagogic methods used by teachers in special and regular classes. However, the results of this exploratory study must be interpreted with caution. The stratification of teachers by MTAI scores resulted in a particular bias in the amount of teaching experience of Ss. The high MTAI subgroup was composed of teachers with significantly fewer years of experience than the low MTAI sample. This suggests that both attitudes and verbal behavior in the classroom may be related to amount of teaching experience as well as the age of the teacher.

SUMMARY

Flanders' Interaction Analysis technique was used to compare two groups of seven TMR classrooms. The sample was selected from a population of 87 TMR classrooms on the basis of high or low teacher score on the MTAI. High MTAI teachers used more questions and had more student response. Low MTAI teachers used more lecture and criticism and had more student-initiated talk. The results of this exploratory study did not yield unqualified support for the hypothesis that teachers' verbal behavior in the classroom is related to MTAI scores. However, the Interaction Analysis technique holds promise for a productive approach in the study of the verbal dynamics between teachers and pupils in special and regular education classrooms.

*This related study accomplished by Melvyn I. Semmel, Beverly Herzog, Mary Charves and James Krieder was made possible through the assistance of the Center for Research on Language and Language Behavior, University of Michigan. The study is part of a report submitted to the Office of Education as Studies in Language and Language Behavior. Progress Report No. 4 February 1, 1967.

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RELATED STUDY 2

THE RELATIONSHIP OF VERBAL COMMUNICATION IN TMR CLASSROOMS TO PUPIL GROWTH*

THE RELATIONSHIP OF VERBAL COMMUNICATION IN TMR CLASSROOMS TO PUPIL GROWTH

A logical area of pedagogical activity upon which to focus in classrooms for the trainable mentally retarded (TMR) is the area of verbal communication. The verbal interaction between teacher and students is assumed to be an extremely important variable in the educational process. A number of investigators have attempted to classify and quantify teacher and student verbal behavior (Smith and Meux, 1962; Aschner, 1963; Cawley and Chase, 1966; Minskoff, 1967; and Davis and Tinsley, 1968). These researchers have primarily focused on the cognitive aspect of the interaction process in the classroom. Other researchers have focused on the social-emotional climate in the classroom: (Medley and Mitzel, 1963; Anderson, 1939; Withall, 1956; and Flanders, 1961, 1962, 1963, 1964, and 1965).

The work of Flanders is possibly the most well known in the area of classroom verbal interaction. He has developed a set of ten categories and a method of noting consecutive communication events through entries in a ten-by-ten matrix. Flanders' technique has been used by several investigators to examine verbal interaction in special classes as well as regular elementary classrooms. Semmel, Herzog, and Jorgenson (1965) employed Flanders' system to compare the verbal interaction in ten classrooms for the educable mentally retarded (EMR) with the interaction in ten classrooms for regular elementary students. Teachers of EMR children used more praise and encouragement along with more use of student ideas and received more student initiated responses. Teachers in regular elementary classes gave more directions.

In an unpublished study (included in this report) Flanders' technique was used to compare the classroom interaction patterns of two groups of seven teachers of trainable mentally retarded children. The teachers were stratified into groups based on high or low scores on the Minnesota Teacher Attitude Inventory (MTAI). The results of the study did not yield unqualified support for the hypothesis that teachers' verbal behavior in the classroom is related to MTAI scores. However, the results indicated that teachers who scored high on the MTAI used more questions and had more student response, whereas teachers who scored low on the MTAI used more lecture and criticism and had more student-initiated talk.

Interaction Analysis (IA) was also used in regular second grade classrooms by Emmer (1967), who demonstrated that teachers who increased their use of student ideas in their classrooms also had an increase in student initiated talk.

The present study used Flanders' IA technique to investigate the verbal behavior of teachers and TMR children in the public schools. The purpose of the study was to ascertain the differences in the classroom interaction patterns of two groups of teachers. The interaction patterns of one group of teachers whose TMR students showed high gain (HGT) on the Communication subscale of the Cain Levine Social Competency Scale (CL) were compared with the patterns of teachers whose TMR students showed little or no gain (LGT) on the Communication subscale of the CL.

Teachers who demonstrate expansive and indirect teaching styles probably encourage their TMR students to talk. Within the Flanders' model, acceptance of pupil feeling (category 1) should have a tendency to increase rapport between the teacher and pupil. The use of praise (category 2) and the use of pupil ideas (category 3) should have reinforcing effects for pupil talk. Teacher praise following a statement by the student is in fact a form of verbal reinforcement. The use of a student's idea is also a form of verbal reinforcement since the teacher's use of the idea implies value of that idea by the teacher.

Since TMR children are very poor communicators, an important goal in developing communication skills is to increase the child's initiative in making verbal statements. Teacher statements of praise or the use of students' ideas should have a beneficial effect on the increase of student-initiated talk.

Teachers who demonstrate restrictive and direct teaching styles tend to discourage student talk in their classrooms. The frequent use of giving directions (category 6) would have a tendency to shut off student responses, whereas the use of criticism (category 7) would have a negative influence on student talk. If students are criticized, a climate is created in the classroom which prevents the child from feeling free to express himself.

Following the above line of reasoning, the investigators hypothesized that the interaction patterns in the classrooms of teachers whose students showed high gain on the Communication subscale of the CL would differ from the interaction patterns in the classrooms of teachers whose students showed little or no gain on the Communication subscale of the CL. Specifically, we predicted that:

(H1). The HGT i/d ratio would be higher than the LGT i/d ratio. The i/d ratio is composed of the percentage of expansive activity in the classroom (defined as the percentage of tallies in categories 1, 2, and 3 of IA) divided by the percentage of restrictive activity in the classroom (defined as the percentage of tallies in categories 6 and 7 of IA).

(H2). The HGT I/D ratio would be higher than the LGT. The I/D ratio is composed of the percentage of indirect activity in the classroom (defined as the percentage of tallies in categories 1, 2, 3, and 4 of IA) divided by the percentage of direct activity in the classroom (defined as the percentage of tallies in categories 5, 6, and 7 of IA).

(H3). The HGT would have a higher percentage of expansive activity than the LGT. Expansive activity was defined as the percentage of tallies in categories 1, 2, and 3 of IA.

(H4). The HGT would have a lower percentage of restrictive activity than the LGT. Restrictive activity was defined as the percentage of tallies in categories 6 and 7 of IA.

(H5). The HGT would have a higher percentage of indirect activity than the LGT. Indirect activity was defined as the percentage of tallies in categories 1, 2, 3, and 4 of IA.

(H6). The HGT would have a lower percentage of direct activity than the LGT. Direct activity was defined as the percentage of tallies in categories 5,6 and 7 of IA.

(H7). The HGT would have a higher percentage of tallies in each of category 1 (acceptance of pupil feeling), category 2 (praise), and category 3 (use of pupil ideas) than the LGT.

(H8). The HGT would have a lower percentage of tallies in each of category 6 (giving directions) and category 7 (criticism) than the LGT.

(H9). The HGT would have a higher percentage of pupil-initiated pupil talk than the LGT.

(H10). The HGT would have a higher percentage of pupil-response talk than the LGT.

METHOD

Sample.

The sample was selected from among a total population of 86 classrooms of TMR children in Wayne County, Michigan. Interaction Analysis data was gathered on a group of 14 classrooms selected because of an extreme high or low teacher score on the Minnesota Teacher Attitude Inventory. The present sample of twelve classrooms was selected from the fourteen on the basis of high or low student gain on the Communication subsclae of the Cain Levine Social Competency Scale. The interaction patterns for 6 classrooms in which the students showed high gain on the Communication subsclae were compared with interaction patterns for 6 classrooms in which the students showed little or no gain on the Communication subscale.

The two groups of classrooms were examined with regard to teacher and student characteristics. The academic training of the two teacher groups was similar with four similar with four Bachelors Degrees and two Masters Degree in the HGT group compared to five Bachelors Degrees and one Masters Degree among the LGT. The number of students in the two groups of classrooms was similar with an even split of 28 males and 28 females in the HGT classrooms compared to 26 males and 25 females in the LGT classrooms. Table 67 presents the characteristics of the teachers and pupils who participated in this study.

Cain Levine Social Competency Scale

The instrument used to determine growth in Communication for TMR children was the Communication subscale of the Cain Levine Social Competency Scale (CL). The CL was developed to provide a measure of the social competence of TMR children. The scale provides four subscales: Communication, Social Skills, Initiative, and Self Help. The Communication subscale measures the degree to which the child makes himself understood. The subscale consists of ten items on the communication ability of the TMR child. The interviewer who completes the scale rates the child from low to high on a particular item by responding to a one to four point scale.

Interaction Analysis

The Interaction Analysis Technique (Flanders 1964) was used to record the verbal interaction between the teachers and students in the TMR classes. The system classifies verbal interaction into ten categories. Seven of the ten categories refer to teacher talk, two of the categories designate talk by students, and the final category is a miscellaneous category which records periods of silence or confusion in the classroom. Table 68 lists a brief description of each of the categories in Interaction Analysis.

The seven categories of teacher talk can be examined in slightly different ways. One way to examine teacher talk is through the expansive activity in the classroom. The expansive activity is the percentage of verbal classroom interactions in which the teacher accepts student feelings, praises students, or uses student ideas. Another way to look at teacher talk is through the restricted activity in the classroom. Restrictive activity refers to the percentage of time the teacher gives directions, criticizes, or justifies her authority.

TABLE 67
CHARACTERISTICS OF PUPILS AND TEACHERS

CAIN-LEVINE COMMUNICATIONS GAIN:

VARIABLE	MEAN RANGE	HGT GROUP *28.18 to 57.73	LGT GROUP -27.7 to 6.52
Years Teaching TMR	Mean SD	1.83 1.06	2.50 1.71
Total Years Teaching Experience	Mean SD	9.50 5.94	12.33 11.44
Age (in Mos.) of Teachers	Mean SD	480.50 135.13	542.67 98.49
Age (in Mos.) of Pupils	Mean SD	132.71 30.85	134.96 30.84
IQ of Pupils	Mean SD	41.51 9.87	42.66 8.89

* % Gain

TABLE 68

CATEGORIES FOR INTERACTION ANALYSIS

TEACHER TALK	INDIRECT INFLUENCE	1.*	ACCEPTS FEELING: accepts and clarifies the feeling tone of the students in a non-threatening manner. Feelings may be positive or negative. Predicting or recalling feelings are included.
		2.*	PRAISES OR ENCOURAGES: praises or encourages student action or behavior. Jokes that release tension, not at the expense of another individual, nodding head or saying, "um hm?" or "go on" are included.
		3.*	ACCEPTS OR USES IDEAS OF STUDENT: clarifying, building, or developing ideas suggested by a student. As a teacher brings more of his own ideas into play, shift to category five.
		4.*	ASKS QUESTIONS: asking a question about content or procedure with the intent that a student answer.
	DIRECT INFLUENCE	5.*	LECTURING: giving facts or opinions about content or procedure; expressing his own ideas, asking rhetorical questions.
		6.*	GIVING DIRECTIONS: directions, commands, or orders to which a student is expected to comply.
		7.*	CRITICIZING OR JUSTIFYING AUTHORITY: statements intended to change student behavior from non-acceptable to acceptable pattern; bawling someone out; stating why the teacher is doing what he is doing; extreme self-reference.

TABLE 68

CATEGORIES FOR INTERACTION ANALYSIS

STUDENT TALK	8.*	STUDENT TALK -- RESPONSE: a student makes a predictable response to teacher. Teacher initiates the contact or solicits student statement and sets limits to what the student says.
	9.*	STUDENT TALK --INITIATION: talk by students which they initiate. Unpredictable statements in response to teacher. Shift from 8 to 9 as student introduces own ideas.
	10.*	SILENCE OR CONFUSION: pauses, short periods of silence and periods of confusion in which communication cannot be understood by the observer.

* There is NO scale implied by these numbers. Each number is classificatory, it designates a particular kind of communication event. To write these numbers down during observation is to enumerate, not to judge a position on a scale.

PROCEDURE

Growth in Communication

In order to determine classroom growth in communication, the CL was administered to the TMR children involved in the study. CLs were completed (in October and November, 1965) for all children in a classroom by each teacher involved in the study. No teacher had more than one CL to administer on any one day and the child order for the administration of the CLs was randomly determined.

The CLs were administered in the following fall. Growth in communication for the TMR students was determined by the difference between the scores on the two administrations of the Communication subscale of the CL. Class means for gain or loss in communication were computed for each of the twelve classes. Since it was felt that a raw score gain was more beneficial to the students who scored low on the Communication subscale of the first CL, the class mean on communication for each of the classes was calculated on a percentage basis. The percentage score attempted to correct for ceiling effects on the CL by permitting the high scorers to show as much potential gain as the low scores.

The percentage gain for communication was found by placing the amount gained during the year over the amount of possible gain. Consequently, if a student showed loss during the year, the loss was placed over the amount of possible loss in order to determine the percentage of loss for that particular student. Class means were then computed by adding the percentage gains, subtracting the percentage losses, and dividing by the number of students in each class.

Once the class means were established, the classes could be divided into high mean gain communication classes and low mean gain communication classes. The high gain communication classes ranged from a mean gain of 25.08 percent to a mean gain of 57.73 percent. The low mean gain classes ranged from a mean loss of 27.7 percent during the year to a mean gain of 6.52 percent.

The expansive and restrictive activity in the classroom are used as a ratio which has been named the i/d ratio. The ratio is composed of the percentage of expansive activity divided by the percentage of restrictive activity. The percentage of expansive activity is also used in combination with the percentage of time the teacher uses questions to form an area of indirect activity. The percentage of restrictive activity along with the percentage of time the teacher lectures is used to form an area of direct activity. The indirect and direct activity in the classroom are used as a ratio which has been named the I/D ratio. The ratio is composed of the percentage of indirect activity divided by the percentage of direct activity.

In addition to the above ways of analyzing teacher talk, it is also possible to examine the individual categories of teacher talk, i.e., category 1, acceptance of pupil feeling; category 2, praise or encouragement; category 3, use of pupil ideas; category 4, questions; category 5, lecture; category 6, directions; and category 7, criticism.

Two categories of student talk are utilized in the system of IA developed by Flanders. One of the categories refers to the percentage of student talk initiated by the teacher, whereas the other category of student talk refers to the percentage of student talk initiated by the students themselves. A total amount of student talk is composed of the cumulative percentage of the two categories.

An observer trained in IA sits in the classroom and in three-second intervals records the category number for the communication event observed. After an observation period is completed, the recorded numbers are plotted on a ten-by-ten matrix which lists the Interaction Analysis categories horizontally and vertically. When a matrix is completed, it shows the loadings of the categories and reveals the pattern of verbal interaction taking place during the classroom observation. Figure 11 shows the area of matrix analysis used in the Interaction Analysis system.

AREAS OF MATRIX ANALYSIS

CATEGORY		CLASSIFICATION	CATEGORY	1	2	3	4	5	6	7	8	9	10	TOTAL
ACCEPTS FEELINGS	EXPANSIVE	INDIRECT	1											
PRAISE			2											
STUDENT IDEAS			3	ACCEPT FEELINGS	PRAISE	STUDENT IDEAS	ASK QUESTIONS	LECTURES	GIVES DIRECTIONS	CRITICISM	STUDENT RESPONSE	STUDENT INITIATION	SILENCE OR CONFUSION	
ASKS QUESTIONS			4											
LECTURES			5											
GIVES DIRECTIONS	RESTRICTIVE	DIRECT	6											
CRITICISM			7											
STUDENT RESPONSE		STUDENT TALK	8											
STUDENT INITIATION			9											
SILENCE OR CONFUSION			10											
			TOTAL	i					d		STUDENT TALK			GRAND TOTAL
				I				D						

Figure 11

The percentages in the various categories of IA were axamined in three different ways in the results section. One way was to use all the tallies in the computation of the percentages for the categories. Another way was to use all the tallies except the category 10 tallies. This procedure allowed the tallies in the category of silence and confusion to be excluded from the computation of the mean percentages. Therefore, the percentages were based only on meaningful conversation in the classroom involving teachers and pupils. A third method of figuring the percentages was to exclude categories 8, 9, and 10. This procedure permitted the mean percentages in the first seven categories to be figured only on the total amount of teacher talk tallies.

Table 69 presents the percentage of tallies in each of the ten categories of IA for the HGT and the LGT. The results of t-tests between the means of the two groups is also presented. The results of the t-tests indicated that only one of the ten categories, category 6, giving directions, was significant (p.05) in favor of the LGT group.

In view of the difficulty of obtaining significance when relatively small Ns are used, Figure 12 graphically represents the different percentages in the various categories of the different teacher groups.

Table 70 presents the means and standard deviations along with the results of t-tests comparing the two teacher groups on other variables of IA. Significant differences were found on three of the IA variables: the LGT group was more restrictive and more direct ($p < .01$), whereas the I/D ratio of the HGT group was higher ($p < .05$).

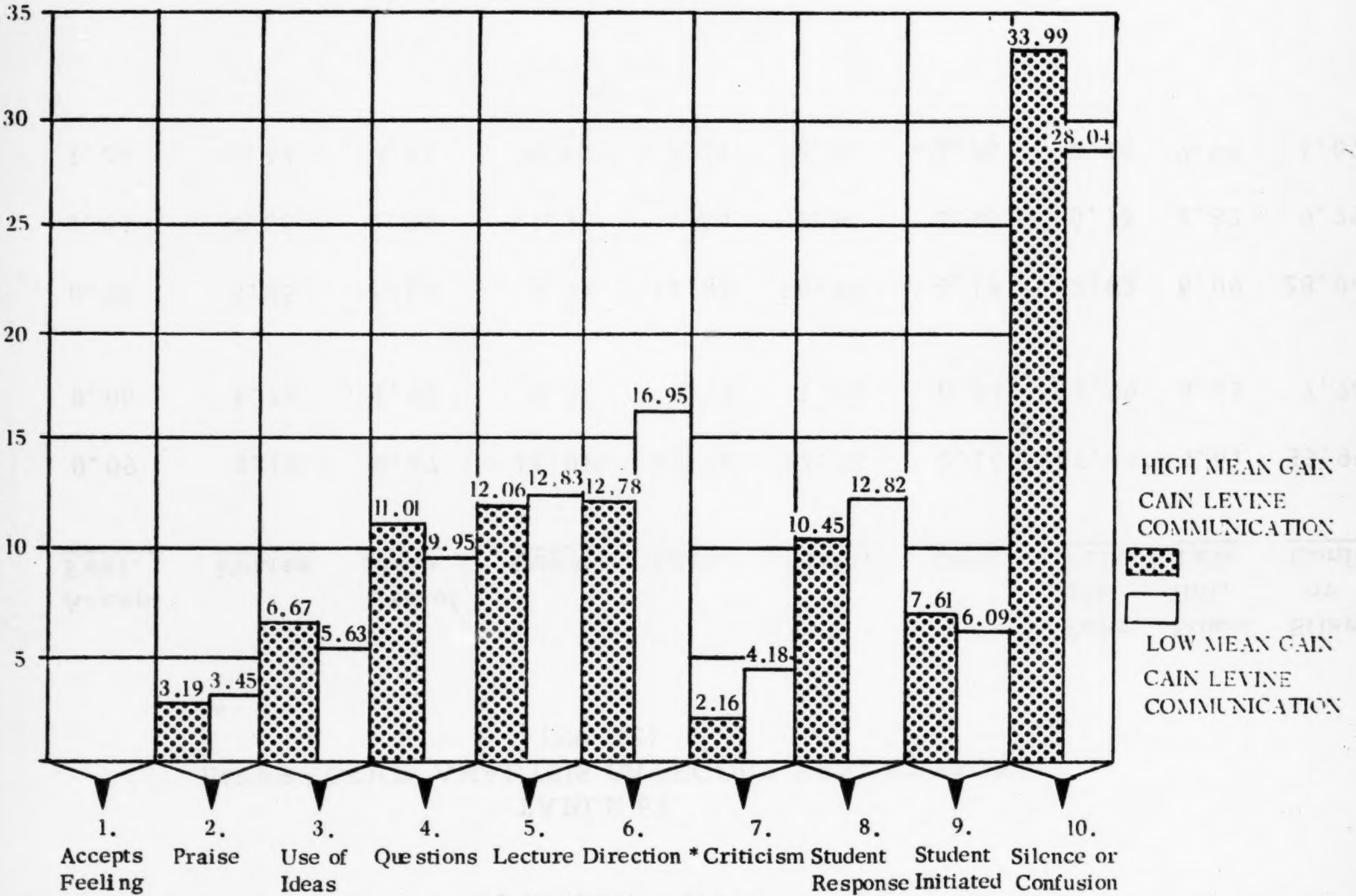
Table 71 presents the mean percentages along with standard deviations and t-test results for the categories of IA when category ten is excluded from the computations and percentages. Since category ten involves situations where there is no verbal communication or where the communication is incomprehensible, the exclusion of category ten leaves only those categories included in the computations which pertain to comprehensible verbal communication.

TABLE 69
INTERACTION ANALYSIS CATEGORY PERCENTAGES
(N = 12)

	Accept Feel.	Praise	Use of Ideas	Quest.	Lect.	Dirct.	Crit.	Tchr. Init. Talk	Studn. Init. Talk	Silen. or Confus.
HGT MEAN	0.09	3.19	6.67	11.01	12.06	12.78	2.16	10.45	7.61	33.99
SD	0.06	1.71	1.93	5.71	2.73	1.76	0.54	3.99	4.43	7.76
LGT MEAN	0.05	3.45	5.63	9.95	12.84	16.95	4.18	12.82	6.09	28.04
SD	0.04	0.56	1.95	3.32	1.64	3.54	2.13	5.73	2.87	9.79
t	1.26	-0.33	0.85	0.36	-0.54	*2.36	-2.06	-0.78	0.65	1.07

* $p < .05$

GRAPHIC REPRESENTATION OF INTERACTION ANALYSIS CATEGORIES



* Significant at .05 level

FIGURE 12

TABLE 70
INTERACTION ANALYSIS VARIABLE PERCENTAGES
(N = 12)

	Expan.	Restrict.	i/d Ratio	Indirect	Direct	I/D Ratio	Tchr. Talk	Studn. Talk
HGT								
MEAN	9.95	14.92	0.67	20.96	26.99	0.78	47.95	18.06
SD	2.21	1.48	0.14	6.27	2.97	0.24	7.51	3.41
LGT								
MEAN	9.13	21.13	0.45	19.08	33.97	0.57	53.04	18.92
SD	1.99	3.73	0.13	5.12	3.66	0.18	5.01	5.51
t	0.61	**-3.46	*2.53	0.52	**-3.31	1.54	-1.26	-0.30

* $p < .05$
** $p < .01$

TABLE 71
INTERACTION ANALYSIS CATEGORY PERCENTAGES
(Excluding Category 10)
(N = 12)

	Accept Feel.	Praise	Use of Ideas	Quest.	Lect.	Dirct.	Crit.	Tchr. Init. Talk	Studn. Init. Talk
HGT MEAN	0.13	5.13	10.05	16.03	18.44	19.42	3.29	15.47	12.03
SD	0.09	3.34	2.42	6.76	4.26	2.24	0.88	5.09	7.36
LGT MEAN	0.07	4.85	7.70	13.54	18.28	23.94	5.82	17.26	8.54
SD	0.07	0.75	1.84	3.47	4.27	5.68	2.96	6.90	3.63
t	1.20	0.19	1.73	0.73	0.06	-1.66	-1.83	-0.47	0.95

Figure 13 represents, graphically, the different percentages in the various categories of IA when the tallies relating to silence or confusion are excluded from the mean percentage calculations.

Table 72 presents the mean percentages and standard deviations along with t-test results comparing the teacher groups on other variables of IA when category ten is excluded from the computations. The LGT groups was found to be significantly more restrictive (p. 05).

Table 73 presents the mean percentages and standard deviations along with t-test results for the categories of IA when only the tallies for the first seven categories (teacher talk categories) are included in the computation of the percentages.

Figure 14 represents, graphically, the different percentages in the various categories of IA when the tallies relating to student talk and silence or confusion are excluded from the mean percentage calculations.

Table 74 presents the mean percentages and standard deviations along with t-test results comparing the teacher groups on other variables of IA when categories 8, 9, and 10 were excluded from the computations of the percentages. The LGT group was once again found to be significantly more restrictive ($p < .025$).

The major hypothesis of the study was that the HGT group and the LGT group would differ in their interaction patterns with TMR students in the classroom. Ten specific hypotheses were posited and tested:

H1 Asserted that the HGT i/d ratio would be higher than the LGT i/d ratio. The i/d ratio was computed by dividing the cumulative percentages in the IA categories of 6 and 7 into the cumulative percentages in the IA categories of 1, 2, and 3. The i/d ratio of the HGT was found to be .67 compared to a ratio of .45 for the LGT. The ratio of the HGT was significantly higher

GRAPHIC REPRESENTATION OF INTERACTION ANALYSIS CATEGORIES
(EXCLUDING CATEGORY 10)

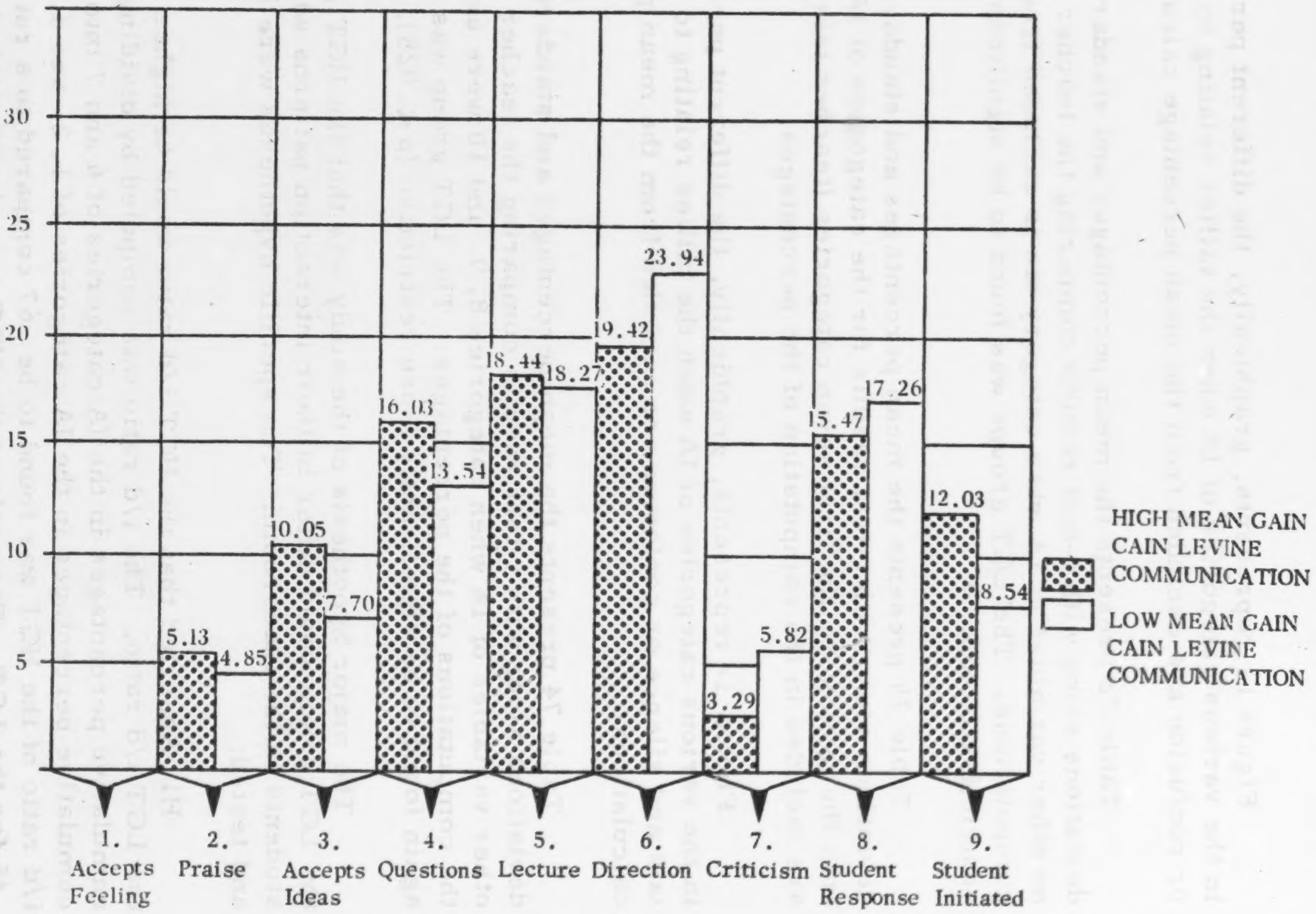


FIGURE 13 N=12

TABLE 72
INTERACTION ANALYSIS VARIABLES PERCENTAGES
(Excluding Category 10)
(N = 12)

	Expansive	Restrictive	Indirect	Direct	Teacher Talk	Student Talk
HGT						
MEAN	15.32	22.71	31.35	41.15	72.50	25.32
SD	4.26	1.63	6.67	4.27	5.30	6.07
LGT						
MEAN	12.62	29.75	26.17	49.03	74.20	25.80
SD	1.43	5.90	4.41	7.75	4.44	4.44
t	1.34	*-2.58	1.45	-1.99	-0.55	-0.14

$*p < .05$

TABLE 73
INTERACTION ANALYSIS CATEGORY PERCENTAGES
(Excluding Categories 8, 9, and 10)
(N = 12)

	Accepts Feeling	Praise	Use of Ideas	Questions	Lecture	Dirct.	Crit.
HGT MEAN	0.19	7.06	13.8	21.90	25.58	26.87	4.61
SD	0.12	4.27	3.04	8.59	6.22	3.15	1.40
LGT MEAN	0.10	6.53	10.45	18.45	24.54	32.07	7.80
SD	0.08	1.10	2.82	5.37	4.95	6.43	3.86
t	1.39	0.25	1.81	0.76	0.29	-1.63	-1.74

GRAPHIC REPRESENTATION OF INTERACTION ANALYSIS CATEGORIES
(EXCLUDING CATEGORIES 8, 9, & 10)

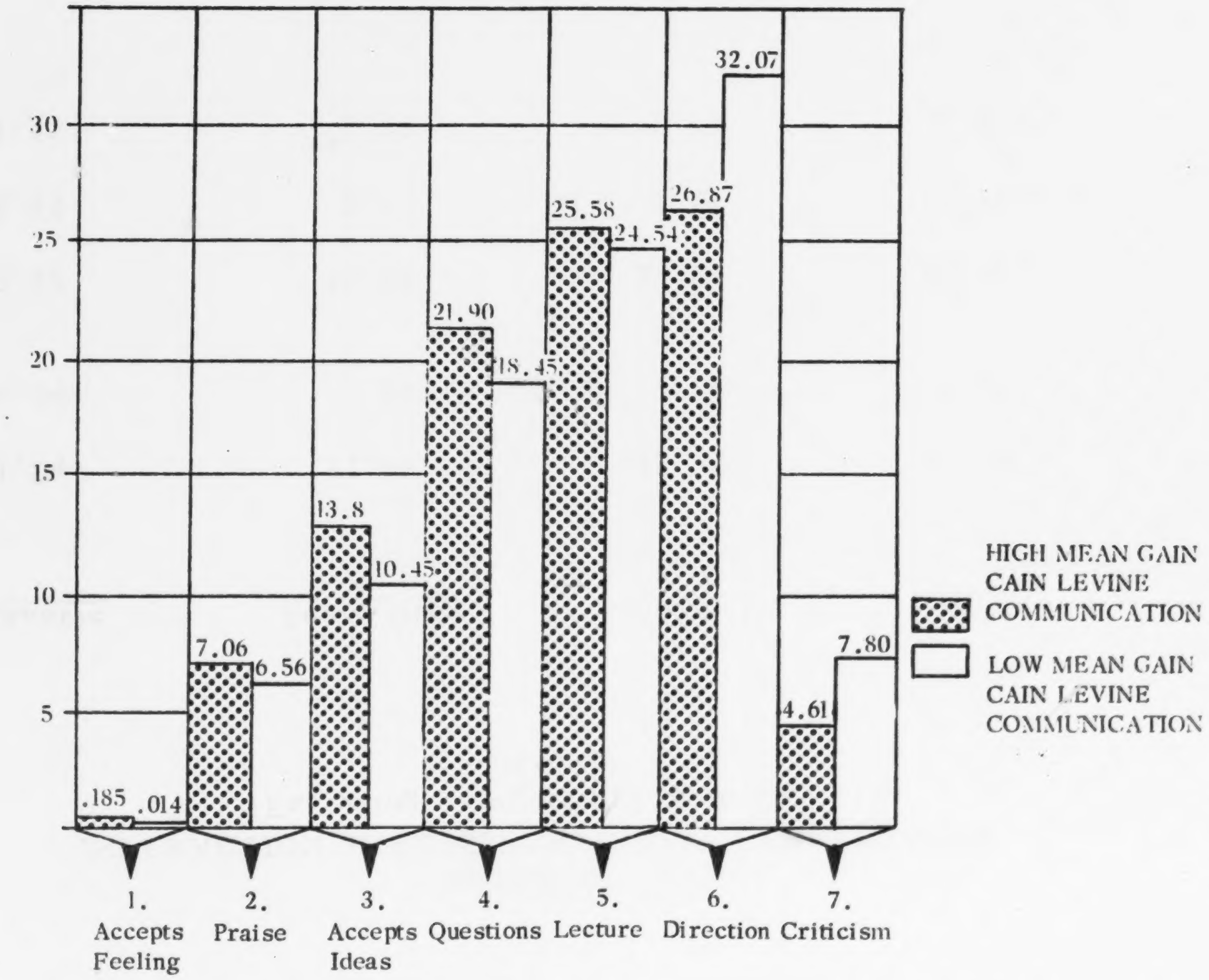


FIGURE 14 N=12

TABLE 74
INTERACTION ANALYSIS CATEGORY PERCENTAGES
(Excluding Categories 8, 9, and 10)
(N = 12)

	Expansive	Restrictive	Indirect	Direct
HGT MEAN	21.04	31.48	42.94	57.06
SD	5.09	3.08	7.19	7.19
LGT MEAN	17.10	39.87	35.59	64.41
SD	2.53	5.97	7.35	7.36
t	1.55	**-2.79	1.60	-1.60

$^{**}p < .025$

Interaction Analysis Training

Three graduate students at the University of Michigan were trained in the IA technique for the study. After an initial period using training tapes and manuscripts of selected classroom situations, the observers began a series of practice sessions in TMR classrooms. After each practice session, the observers discussed their differences in categorization. At several points during the training, a reliability coefficient was computed. The final ratings computed prior to the gathering of the IA data for the study were .87 for observers A and B, .70 for observers B and C, and .75 for observers A and C.

During the months of February and March the classrooms were observed and IA data gathered on each of the classrooms involved in the study. No attempt was made to control the content of the teachers' lessons. However, the teachers were told in advance that an observer would be coming who would be looking at the interaction between teachers and TMR students. The teachers were requested to organize activities which would give the observers an opportunity to note some verbal interaction in the course of their visit.

Two hours of IA data was collected in each of the classrooms involved in the study. The two hours were composed of two one-hour observations made independently by a different observer.

RESULTS AND DISCUSSION

The observation tallies were analyzed using a Fortran program on the IBM 7090 computer (Wrightman, 1961). A matrix was compiled for each teacher in the two teacher groups. Once the IA tallies were placed in matrices, the percentage in each category for each teacher could be figured. The percentage in each category was then added for each teacher group and a mean percentage was obtained for all of the IA variables. The t-test program for the difference between means of an independent sample on the Olivetti-Underwood Programma 101 was utilized to determine the ts for the two teacher groups. The criterion level was set at ($p < .05$) for the computation of a significant t.

(p.05) than the LGT and thus (H1) was supported.

H2 stated that the HGT I/D ratio would be higher than the LGT. The I/D ratio was computed by dividing the cumulative percentages in the IA categories of 1, 2, 3, and 4 by the cumulative percentages in columns 5, 6 and 7. The I/D ratio of the HGT was found to be. 78, whereas the I/D of the LGT was found to be .57. Since the difference between the two ratios was not found significant at the .05 criterion level, (H2) was not supported statistically. However, it is noted the HGT I/D ratio was higher than the LGT -- the obtained difference being in the predicted direction.

H3 stated that the HGT would have a higher percentage of expansive activity than the LGT. Expansive activity was defined as the percentage of talk in categories 1, 2, and 3 of IA. The percentages of expansive activity for the HGT group was 9.95 as compared to 9.13 for the LGT group when all the IA tallies were considered. When category 10 (silence or confusion) was excluded from the computation of the percentages for expansive activity, the mean percentages for the HGT group was 15.32 and for the LGT group 12.62. When categories 8, 9, and 10 were all excluded from the computation of the percentages so that only a percentage of expansive activity relating to teacher talk was given, the percentage for the HGT group was 21.03 and for the LGT group 17.10. None of these differences between the means of the groups was found to be significant; however, the trend of the data was once again in support of the hypothesis.

H4 stated that the HGT would have a power percentage of restrictive activity than the LGT. Restrictive activity was defined as the percentage of talk in categories 6 and 7 of IA. The percentage of restrictive activity for the HGT was found to be 14.92 and the percentage for the LGT was 21.13 when all the IA tallies were used in the computation of the mean percentages. This difference was significant ($p<01$). When category 10 was excluded from the computation, the mean percentages for restrictive activity were 22.71 for the HGT and 29.75 for the LGT.

This difference was again significant ($p < .05$). When categories 8, 9, and 10 were excluded from the computation, the mean percentages for restrictive activity were 31.48 for the HGT and 29.87 for LGT. This difference again was significant (p.025).

H5 stated that the HGT would have a higher percentage of indirect activity than the LGT. Indirect activity was defined as the percentage of tallies in categories 1, 2, 3, and 4 of IA. The mean percentage of indirect activity for the HGT was found to be 20.96 and for the LGT 19.08 when all the IA tallies were considered. When category 10 was excluded from the computation of the mean percentage for indirect activity, the percentage for the LGT was 42.94 compared to a percentage of 35.59 for the LGT. None of the differences between the percentages of the groups was statistically significant; however, the trend of the data was in the direction of the hypothesis.

H6 asserted that the HGT would have a lower percentage of direct activity than the LGT. Direct activity was defined as the percentage of tallies in categories 5, 6, and 7 of IA. The mean percentage of direct activity for the HGT was 26.99 and for the LGT 33.97 when all the IA tallies were considered. When category 10 was excluded from the computation, the mean percentages for direct activity were 41.15 for the HGT. When categories 8, 9, and 10 were all excluded from the computation of the mean percentage for direct activity, the mean percentage for the HGT was 57.06 compared to a mean percentage of 64.41 for the LGT. Although none of the differences between the percentages were statistically significant, the trend of the data was in the direction of the hypothesis.

H7 predicted that the HGT would have higher percentages in each of the categories of acceptance of pupil feeling, use of praise or encouragement, and use of pupil ideas than the LGT. In category 1, acceptance of pupil feeling, the HGT had a mean percentage of .09 compared with the LGT mean percentage of .05 when all the tallies in IA were considered. When category 10 was excluded, the mean percentage for the HGT group was .13 and the mean percentage of the LGT group .07. When categories 8, 9 and 10 were all excluded from the computation of the mean percentage for acceptance of pupil feeling, the mean percentage for the HGT group was .19 compared to a mean percentage of .10 for the LGT. Although none of the differences between the percentages was significant, the trend of the data was in the direction of the hypothesis.

For category 2, use of praise or encouragement, the HGT had a mean percentage of 3.19, whereas the LGT had a mean percentage of 3.45 when all the IA tallies were considered. When category 10 was excluded, the mean percentage of the HGR was 5.13 and the mean percentage of the LGT was 4.85. When categories 8, 9, and 10 were excluded, the mean percentage of the HGT was 7.06 compared with a mean percentage of 6.56 among the LGT. None of the differences between the two groups was significant, but two of the three comparisons were in the direction of the hypothesis.

For category 3, use of pupil ideas, the HGT had a mean percentage of 6.67 compared to a mean percentage of 5.63 for the LGT when all the tallies in IA were considered. When category 10 was excluded from the mean computation, the mean percentage for the HGT was 10.05 and the mean percentage for the LGT was 7.70. When categories 8, 9, and 10 were all excluded, the mean percentage for the HGT and the mean percentage for the LGT was 10.45. Although none of the comparisons between means was statistically significant, the trend of the data was all in the direction of the hypothesis.

H8 stated that the high gain teachers would have lower percentages in each of the categories of giving directions and criticism than the LGT. In category 6, giving directions, the mean percentage for the HGT was 12.78 while the mean percentage was 16.95 for the LGT when all the tallies in IA were considered. The difference between the means was significant ($p<.05$). When category 10 was excluded from the computation of the mean percentage for the HGT group was 19.42 and the mean percentage for the LGT group was 23.94. When categories 8, 9, and 10 were all excluded, the mean percentage for the HGT group was 26.87

compared to 32.07 for the LGT group. Neither of the last two comparisons was statistically significant; however, the trend of the data was in the direction of the hypothesis.

For category 7, criticism of justification or teacher authority, the mean percentage of the HGT was 2.16 and the mean percentage of the LGT was 4.18 when all the tallies in IA were considered. When category 10 was excluded from the mean calculations, the mean percentage for the HGT was 3.29 compared to 5.82 for the LGT. When categories 8, 9, and 10 were all excluded, the mean percentage for the HGT was 4.61 while the mean percentage for the LGT was 7.80. Although none of the differences between the means was statistically significant, the trend of the data was in the direction of the hypothesis.

H9 predicted that the HGT would have a higher percentage of pupil initiated pupil talk than the LGT. For category 9, student initiated pupil talk, the HGT mean percentage was 7.61 compared to a mean percentage of 6.09 for the LGT group when all the tallies in IA were considered. When category 10 was excluded from the mean percentage calculations, the HGT had a mean percentage of 12.03 compared to a mean percentage of 8.54 for the LGT. Neither of these comparisons was statistically significant, but once again the trend of the results was in the direction of the hypothesis.

H10 asserted that the HGT would have a higher percentage of pupil talk than the LGT. Student talk is defined as the cumulative percentage of IA tallies in the categories of eight and nine. When all the IA tallies were considered in the calculation of the mean percentages, the mean for the HGT was 18.06 and the mean for the LGT was 18.92. When category 10 was excluded from the mean percentage calculations, the mean for the HGT was 25.32 compared to 25.80 for the LGT. The difference between the means was not statistically significant and the trend of the data was not in the direction of the hypothesis.

The rationale presented in support of the specific hypotheses proposed that teachers who were more expansive and indirect would encourage pupil talk. Teachers who were restrictive and direct would discourage student talk. The results indicated partial support for such an explanation. The rationale developed for the HGT was that their students would be reinforced to a greater extent and, as a result, the students would increase their talk. An increase in student talk could easily lead to an increase in communication for a TMR child. The rationale developed for the LGT was that the restrictive environment imposed by the teacher would have a negative influence on the development of communication in the child.

Although the results indicated support for the hypothesis that the LGT were more restrictive in their teacher talk, conclusive results were not found to show that the HGT were more expansive in their talk. When all the tallies were considered in the computation of the percentages in the various categories, the percentage of tallies in category 2, praise, was slightly higher for the LGT than for the HGT. Although this finding was reversed when category 10 and categories 8, 9, and 10 were excluded from the computation of the percentages, the difference in praise for the two groups was minimal.

Another important result which did not support the rationale was the finding concerning student talk. Although student initiated talk was higher in the classrooms of the HGT as hypothesized, the amount of teacher initiated talk was higher in the LGT classrooms. The cumulative amount of student talk was very similar in both groups. A practice effect to improve communication could not be supported in view of the findings concerning student talk.

Category 10, silence, or confusion, played an extremely important role in the classroom, since over 33% of the classroom time for the HGT and just over 28% of the classroom time for the LGT was placed in this category. Since during the period of confusion a number of children could be practicing communication skills, whereas no children could be practicing communication during a period of silence, a further breakdown of this category into silence or confusion might be useful in TMR classrooms. If the HGT permit more confusion, while the LGT encourage more silence,a practice effect in the HGT classrooms might still be present which helps develop communication skills.

One of the key aspects of the results was the trend data. Although hypotheses 2, 3, 5, 7, and 9 were not statistically significant, the results were in the direction of the hypotheses. Since the number of teachers in each group was small (N = 6) and significance with a small N is difficult to obtain, the investigators considered the trend data to be a highly meaningful aspect of the results.

The study has definite implications in the areas of teacher training and inservice training for teachers of TMR children. If a major goal in TMR classrooms is to improve verbal communication, and teachers who are less restrictive and more expansive can achieve greater communication gain with TMR students, then efforts should be made in teacher training institutions and inservice training programs to train teachers of the TMR to be less restrictive and more expansive. Perhaps training in IA which emphasizes high loadings in the expansive categories and limits loadings in the restrictive categories would be beneficial.

An alternative hypothesis to account for communication gain in the HGT classrooms is possible. Since the gain scores in communication were computed from two CL Scales which the teachers completed on all the children in their classrooms, a rating difference could be hypothesized between the HGT and the LGT. The LGT who are more restrictive in their classroom interaction may also be more restrictive when filling out CL Scales. The HGT who were more expansive in their classrooms may also be more expansive when filling out CL Scales. The students in the classrooms of the LGT would show less gain on the communication subscale because of this rating difference between teachers.

SUMMARY

This study used Flanders' technique of Interaction Analysis to examine the interaction patterns in twelve classrooms for TMR children. The interaction patterns for six classrooms in which the students showed high gain on the Communication subscale of the Gain Levine Social Competency Scale were compared with the interaction patterns of six classrooms in which the students showed little or no gain on the Communication subscale.

The results indicated substantiation for the hypothesis that the interaction patterns in the classrooms of teachers whose students showed high gain on the Cain Levine Social Competency Scale differ from the interaction patterns in the classrooms of teachers whose students showed high gain had a significantly higher i/d ratio than teachers whose students showed low gain. In the classes where there was little or no gain in Communication the teachers were found to be significantly more restrictive and direct in their interaction with students. The LGT group also gave significantly more directions in class.

Ten specific hypotheses were posited and although only hypotheses 1, 4, 6, and part of 8 were found to be statistically significant the trend of the results for hypotheses 2, 3, 5, 7, and 9 was in the direction of the hypotheses. Since the number of subjects was small (N = 12) and significance extremely difficult to obtain, trends in the data were considered important.

[*] This related study was accomplished by Melvyn I. Semmel and James Krieder, University of Michigan.

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RELATED STUDY 3

THE RELATIONSHIP OF TEACHER MORALE TO PUPIL GROWTH IN TMR CLASSROOMS*

THE RELATIONSHIP OF TEACHER MORALE TO PUPIL GROWTH IN TMR CLASSROOMS

The purpose of this study was to examine the morale of the teachers involved in the major investigation. The study attempted to answer two questions; namely, How does the morale of teachers of trainable mentally retarded (TMR) children compare to the morale of other teachers?" and, "are the morale scores of teachers of TMR children related to TMR student social competency growth in the classroom?"

METHOD

Sample.

Data concerning teacher morale and student social competency growth was collected for fifty classrooms of TMR children in Wayne County, Michigan. In order to examine the relationship between teacher morale and child social competency gain, a final sample of thirty classrooms was selected on the basis of high and low extremes of student gain in social competency. The morale scores of fifteen teachers (HGT) whose students showed high gain in social competency were compared with the morale scores of fifteen teachers (LGT) whose students showed little or no gain.

Purdue Teacher Opinionaire.

The instrument used to determine teacher morale was the Purdue Teacher Opinionaire (PTO). The PTO provides a total score to indicate the general level of teacher morale and ten subscores which break down morale into the following dimensions: 1) Teacher Rapport with Principal, 2) Satisfaction with Teaching, 3) Rapport Among Teachers, 4) Teacher Salary, 5) Teacher Load, 6) Curriculum Issues, 7) Teacher Status, 8) Community Support of Education, 9) School Facilities and Services, and 10) Community Pressures. (See Appendix F)

Cain Levine Social Competency Scale.

The instrument used to determine student growth in social competency was the Cain Levine Social Competency Scale (CL).

The CL was developed explicitly to measure the competence of TMR children and provides four subscales: Communication, Social Skills, Initiative, and Self Help. A total score is determined by the cumulative total of the subscale scores.

PROCEDURE

Teacher Morale.

The teachers involved in this study were requested to attend a data gathering session in August of 1967, where they completed the PTO along with several other instruments used in the total investigation. Once the PTO was administered, the instrument was scored to give an indication of teacher morale for each of the fifty teachers. By comparing the morale scores of the teachers of TMR children to the morale scores of teachers used in the PTO norms, the investigators, could acquire some indication of how the morale of teachers of TMR children compared to the morale of other teachers. Within the population of TMR teachers, the morale scores of a group of teachers whose students showed high social competency gain could be compared to a group of teachers whose students showed little or no social competency gain in order to answer the question of whether teacher morale is related to student gain in social competency.

Growth in Social Competency.

Classroom growth in social competency was determined through the administration of the CL. Each teacher completed the CL on two occasions for each of the children in her classroom during the school year of 1966 to 1967. The first administration of the CL was in the fall of 1966 during the months of October and November. The second administration of the CL was in the spring of 1967 during the months of May and June. Each teacher had only one CL to administer on any school day, and the child order for the CL administration was randomly determined.

Once the two CLs on each child were scored, the difference between the two CL scores could be figured in order to determine the growth in social competency. After the individual gains were scored, it was possible to compute class means for gain or loss in social competency for all of the children in each class. Since it was felt that a raw score gain was more beneficial to the students who scored low on the first administration of the CL, the individual gain and mean gain for each class was calculated on a percentage basis. The percentage score attempted to correct for ceiling effects by permitting the high scorers to show as much potential gain as the low scorers.

The percentage gain for social competency was found by placing the amount gained during the year over the amount of possible gain. Consequently, if a student showed loss during the year, the loss was placed over the amount of possible loss in order to determine the percentage of loss for that particular student. Class means were then computed by adding the percentage gains, subtracting the percentage losses, and dividing by the number of students in each class.

Once the class means were obtained, the classes were ranked from the highest mean gain class to the lowest mean gain class and fifteen teachers chosen from each extreme of the distribution. The thirty teachers chosen in the above manner were used to answer the question of whether morale scores of teachers were related to TMR students' social competency gain in the classroom. The class mean percentage gain in social competency for the high mean gain group ranged from 20.93% to 65.31% with a mean of 33.09, SD11.60, whereas the low mean gain group ranged from a loss of 19.85% to a gain of 5.96% with a mean of -2.94%, SD 6.80.

RESULTS AND DISCUSSION

The morale of teachers of TMR children compared to the morale of other teachers was the first question with which this study concerned itself. Table 75 lists the means and standard deviations for the total score and ten subscores for the sample of fifty teachers of TMR children and the sample of teachers included in the PTO norms (Bentley and Rempel, p.6). The teachers of TMR children had higher mean scores on the total score as well as on all of the ten subscores which help make up the total PTO score.

TABLE 75
COMPARISON OF TMR SAMPLE WITH PTO NORMS

FACTORS	TMR MEAN N = 50	SD	STANINE SCORE	NORM MEAN N = 3023	SD
Total Score	330.88	33.45	6	312.49	38.21
1	65.50	13.32	5	62.26	13.09
2	72.70	5.83	5	69.00	8.13
3	46.64	6.81	6	41.80	6.25
4	19.72	4.67	5	18.59	5.26
5	36.30	5.81	5	34.98	5.85
6	15.32	3.53	5	14.75	3.44
7	27.00	3.31	6	23.49	5.22
8	15.54	2.98	5	14.62	3.57
9	15.00	3.43	6	13.47	3.77
10	17.16	2.45	5	16.37	2.75

COMPARISON OF HGT WITH LGT
MEAN FACTOR SCORES CONVERTED TO STANINE SCORES

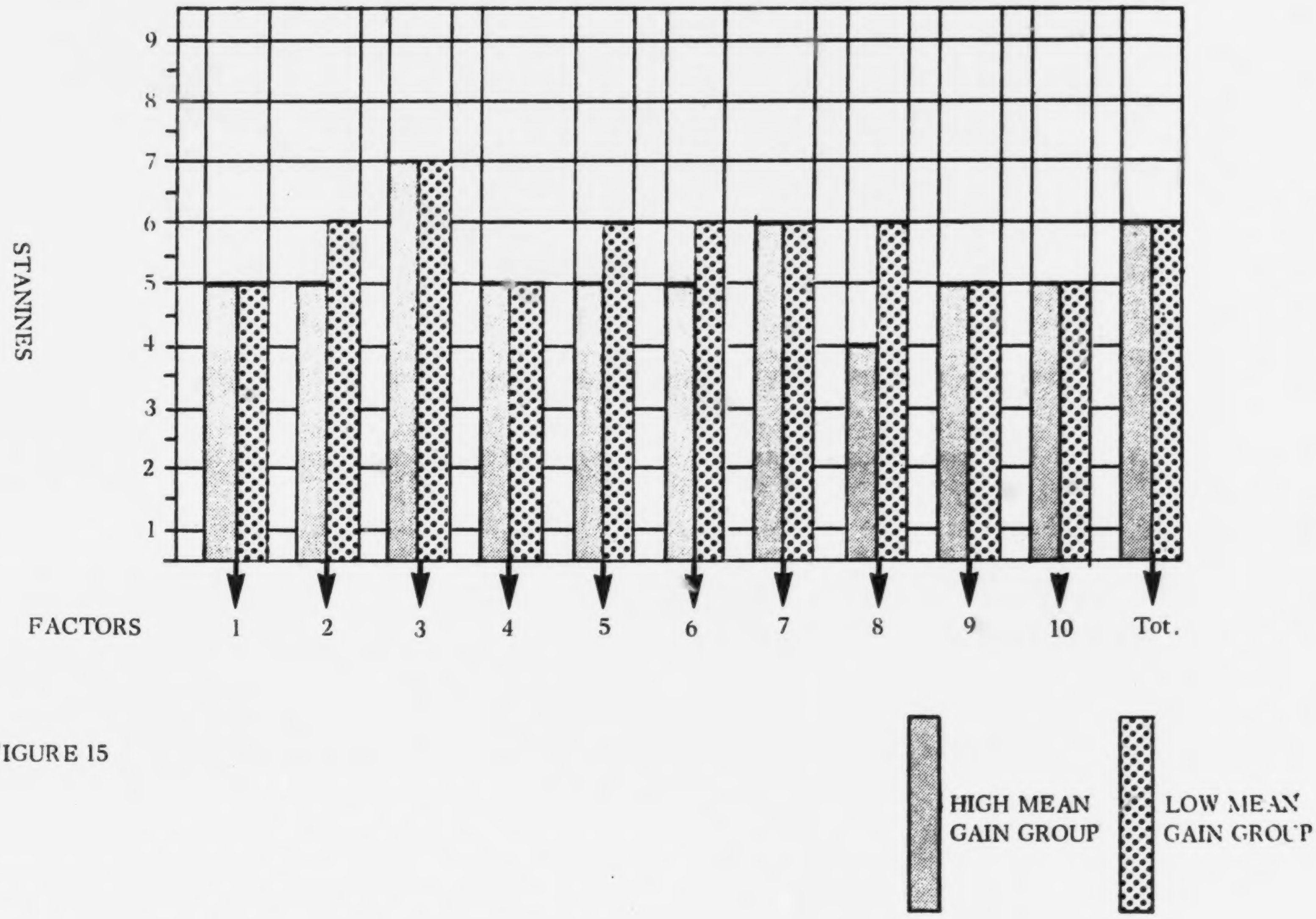

FIGURE 15

The TMR teachers' mean raw scores were a so converted to stanine scores based on the norm distribution as shown in Figure 15. The raw score mean for factor 3. Rapport Among Teachers; factor 7, Teacher Status; 9, School Facilities and Services; and Total Score were all high enough to fall in the sixth stanine. The other factor mean raw scores were placed in the fifth stanine when converted to stanine scores.

Although the descriptive statistics show the teachers of TMR children with generally higher morale scores on the PTO, the results must be interpreted with caution. No attempt has been made to compare the two groups statistically because of several factors: 1) a vastly unequal N, 2) a sex difference (men and women were included in the norm sample whereas only women were included in the sample of teachers of TMRs), and 3) a grade difference (only high school teachers were included in the norm sample). Perhaps a more logical comparison in an attempt to answer question one would be to compare a sample of women elementary teachers to the sample of teachers of TMR children in this study.

In order to answer the question concerning the relationship of teacher morale to TMR students' social competency growth, a final sample of thirty classrooms was chosen on the basis of high or low extremes of student gain in social competency. Means and standard deviations for the PTO were figured for the group of teachers whose students showed high gain in social competency along with the means and standard deviations for the group of teachers whose students showed little or no gain in social competency. A t-test program for the difference between means of an independent sample on the Olivetti-Underwood Programma 101 was utilized to determine the t's for the two teacher groups. The criterion level was set at .05 for the computation of a significant t.

Table 76 lists the means, standard deviations, and t-test results for the total score and each of the ten subscores on the PTO when the teachers whose TMR students showed high gain on social competency were compared to the teachers whose TMR pupils showed little or no gain in social competency.

TABLE 76
COMPARISON OF HGT GROUP WITH LGT GROUP

FACTORS	HGT MEAN N = 15	SD	LGT MEAN N = 15	LGT SD	t
Total Score	333.13	17.63	342.06	43.53	-0.71
1	68.2	11.14	68.47	13.80	0.06
2	72.07	5.94	73.13	7.56	0.42
3	47.33	4.36	47.13	8.42	0.08
4	20.73	3.57	19.53	6.06	0.64
5	35.0	4.35	39.27	4.14	2.66 *
6	15.80	2.10	16.67	3.86	0.74
7	27.13	3.10	27.27	3.66	0.10
8	14.47	2.96	16.73	3.00	2.01
9	15.07	2.62	16.67	3.36	1.40
10	17.33	2.05	17.20	2.34	0.16

* $p < .05$

The t-test results indicated a significant difference between the teacher groups only on factor 5, Teacher Load. The teachers whose TMR students showed little or no gain in social competency had significantly higher morale scores on the factor of Teacher Load than did the teachers whose TMR pupils showed high gain in social competency.

Since eleven scores of teacher morale were represented by the PTO and on only one of the scores was a significant difference found between the teacher groups stratified on student gain in social competency, it would appear that teacher morale as measured by the PTO and student growth in social competency were not closely related. The most significant aspect of the findings was that the results presented no evidence to indicate that teachers whose students showed more gain in social competency had higher teacher morale. It would seem logical to assume from these results that variables other than teacher morale are more related to pupil gain in social competency. The classrooms where children showed high gain in social competency must have something other than a difference in teacher morale to account for social competency growth.

*This related study was conducted by Melvyn I. Semmel and James Krieder, University of Michigan.

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RELATED STUDY 4

THE RELATIONSHIP OF SUPERVISOR RATINGS OF TEACHERS TO THE SOCIAL COMPETENCY GROWTH OF TMR CHILDREN*

THE RELATIONSHIP OF SUPERVISOR RATINGS OF TEACHERS TO THE SOCIAL COMPETENCY GROWTH OF TMR CHILDREN

The purpose of this study was to examine the relationship between supervisor's ratings for teachers of TMR children and gain in social competency by TMR children. The study attempted to determine if supervisor ratings of teachers whose students showed high gain in social competency differed from the supervisor ratings of teachers whose pupils showed little or no gain in social competency. One hypothesis was proposed by the investigators: the supervisor ratings of teachers whose students show high gain in social competency would be higher than the supervisor ratings of teachers whose pupils showed little or no gain in social competency.

METHOD

Sample

Fifty classrooms for TMR children in Wayne County, Michigan were involved in this study. Supervisor ratings were gathered on the fifty teachers as well as data concerning pupil growth in social competency. A final sample of 36 classrooms was selected on the basis of high or low extremes in pupil social competency gain. Supervisor ratings of 18 teachers (HGT) whose students showed high gain in social competency were compared with the supervisor ratings of 18 teachers (LGT) whose students showed little or no gain in social competency.

Instruments

A Teacher Evaluation Form (TEF) was devised and completed by the supervisors of teachers involved in this study. The TEF consisted of 20 items which concerned individual teacher characteristics and two items which concerned an overall impression of the teacher. Each item on the TEF was scored by choosing a position on a numerical scale from one to seven. The descriptive term for each number on the scale was: 7=superior, 6=very good, 5=good, 4=average, 3=fair, 2=poor, and 1=extremely poor. Therefore, if a teacher was rated superior on each of the 22 items, she received a total of 154 points. A copy of the TEF can be found in Appendix C.

Cain Levine Social Competency Scale

The instrument used to determine pupil growth in social competency was the Cain Levine Social Competency Scale (CL). The CL was developed explicitly to measure the competency of TMR children and provides scores on four subscales: Communication, Social Skills, Initiative, and Self Help. A total score is determined by the cumulative total of the subscale scores.

Procedure

The TEF was completed in May of 1967 by the supervisors of the teachers involved in this study. The supervisor was defined as that person who has immediate supervisory responsibility for the teacher in question. Therefore some regular school principals as well as some directors of special education programs completed the forms. Once the TEF was completed, the instrument was scored to make available a supervisor rating on each teacher.

Classroom growth in social competency was determined through the administration of the CL. Each teacher completed the CL on two occasions for each of the children in her classroom during the school year of 1966 to 1967. The first administration of the CL was in the fall of 1966 during the months of October and November. The second administration of the CL was in the spring of 1967 during the months of May and June. Each teacher had only one CL to administer on any school day, and the child order for the CL administration was randomly determined.

Once the two CLs on each child were received and scored, the difference between the two CL scores could be figured in order to determine social competency growth. After the individual gains were scored, it was possible to compute class means for gain or loss in social competency for all of the children in each class. Since the investigators felt that a raw score gain was more beneficial to the students who scored low on the first administration of the CL, the individual gain and mean gain for each class was calculated on a percentage basis. The percentage score attempted to correct for ceiling effects by permitting the high scorers to show as much potential as the low scorers.

The percentage gain for social competency was found by placing the amount gained during the year over the amount of possible gains. Consequently, if a student showed loss during the year, the loss was placed over the amount of possible loss for that particular student. Class means were then computed by adding the percentage gains, subtracting the percentage losses, and dividing by the number of students in each class.

Once the class means were obtained, the classes were ranked from the highest mean gain class to the lowest mean gain class and eighteen teachers were chosen from each extreme of the distribution. The teachers chosen in the above manner were used to determine if the supervisor ratings of teachers were related to social competency gain by TMR students.

RESULTS

Two statistical approaches were taken to determine whether or not a relationship existed between supervisors' ratings of teachers and student gain in social competency. The first procedure was to compute for all fifty teachers a correlation coefficient for the relationship between teacher score on the supervisor rating scale and classroom percentage gain score on the CL. This correlation was figured by a special Pearson Product Moment correlation program on the Underwood Olivetti Programma 101. The correlation between the two variables was .19 which would indicate that no relationship existed between the two variables.

The other statistical procedure was to use a t test to compare the supervisor ratings of the group of teachers whose students showed the most gain in social competency with the supervisor ratings of the group of teachers whose students showed little or no gain. This comparison was made by means of a t test program for an independent sample on the Underwood Olivetti Programma 101. The results of the t test are presented in Table 77.

DISCUSSION

The evidence from both statistical approaches used to analyze the data did not support the hypothesis that the supervisor ratings of teachers whose students showed high gain in social competency were higher than the supervisor ratings of teachers whose pupils showed little or no gain in social competency.

Several plausible reasons could be advanced to explain why this hypothesis was not supported. The teachers while completing the CL scales may not have accurately judged the growth of their TMR pupils, and thus the child gain scores on the CL may not reflect the actual growth of the TMR child. Supervisor ratings and actual social competency growth of TMR children may still be related if such an explanation is valid. An alternative explanation is that the supervisors do not know how to rate teachers of trainable mentally retarded children. The pupil population in TMR classrooms might be so different from a normal pupil population that a building principal who has had little or no experience with mentally retarded children fails to recognize traits and techniques in teachers which contribute to social competency growth in TMR children. A third explanation could be a combination of both the first and second explanations. Teachers may not have accurately judged the social competency growth of their TMR pupils, and in addition, supervisors may not perceive as desirable the traits and techniques necessary to bring about social competency growth in TMR children.

Yet another rationale for the failure to find a significant relationship between supervisor ratings and child growth in social competency in

TABLE 77

A t TEST COMPARISON OF HIGH AND LOW GAIN TEACHERS BY SUPERVISOR RATINGS

HIGH GAIN TEACHERS		LOW GAIN TEACHERS	
Mean	140.83	Mean	137.00
SD	15.94	SD	19.36

$t = 0.63$

classrooms for TMR children is that factors other than teacher behavior may have an impact on growth in social competency for TMR children. A number of other factors involving the TMR child might bring about advances or decrements in social competency which would have an effect on the mean percentage gain in a teacher's classroom. A high classroom mean percentage gain in social competency could be achieved in spite of rather than because of the teacher.

SUMMARY

This study examined the relationship between supervisor ratings of teachers who work with TMR children and social competency growth of TMR children in the classroom. One hypothesis was proposed: the supervisor ratings of teachers whose students showed high gain in social competency would be higher than the supervisor ratings of teachers whose pupils showed little or no gain in social competency.

A Teacher Evaluation Form was devised and completed in the spring by the immediate supervisors of fifty teachers who taught classrooms of TMR children. Cain Levine Social Competency Scales were also completed by each teacher on the TMR children in her classroom during the fall and again in the spring. Thus, a score on a supervisor rating scale for each teacher and the percentage of child gain in social competency for each classroom could be calculated.

Two statistical approaches were utilized to examine the data: correlation and t test. The results of these approaches did not support the hypothesis that supervisor ratings are higher for teachers whose TMR students show greater gain in social competency. Several explanations were given to account for the insignificant results.

[*] This related study was conducted by Melvyn I. Semmel, James Krieder and Philip Weaver, University of Michigan.

RELATED STUDY 5

MOTHER, FATHER AND TEACHER ASSESSMENTS OF THE SOCIAL COMPETENCY OF TMR CHILDREN*

MOTHER, FATHER AND TEACHER ASSESSMENTS OF THE SOCIAL COMPETENCY OF TMR CHILDREN

The life of the non-institutionalized Trainable Mentally Retarded (TMR) child is a closely supervised one. Because of his comparative inability to make his own decisions, his mobility is restricted by the relevant others in his life (i.e., his parents and teachers) who comprise a small decision-making group engaged in supervising and sheltering him.

The nature of the relationship between the TMR child and his parents has been the object of several summaries (Jordan, 1961; Koch, Fishler, Schild, Graliker, Ragsdale, Keaster and Share, 1962; Zuk, 1962; Ross, 1964; and Farber and Ryckman, 1965). The relationship of TMRs to family dynamics has received particular attention in the literature because these children remain dependent upon the family or other sheltering institution during adulthood. TMR children face institutionalization or a social role that defines them as the "perpetual child" in the family, regardless of their age (Farber, 1964).

The variables that contribute to the relationship between the TMR child and his relevant others have received a great deal of study. One relevant variable has been the sex of the TMR child as it relates to the ability of the parents to deal with the child as well as to the integration of the marriage of the parents. The general theme of sex role identification has been used as a theoretical explanation of differential parental reactions (Levine, 1966). Levine has noted that Farber (1959) found that "parents of retarded boys were helped in their marital integration by institutionalizing their child. However, this finding did not hold for parents of retarded girls." Levine quotes studies by Farber (1960) which showed lower marital integration for parents of retarded boys than for parents of retarded girls. He also discusses Cain and Levine's (1961) finding that "father adaptability was significantly associated with trainable mentally retarded children, whereas mother adaptability was not." Levine feels that it is "...reasonable that the theory of sex-role identification could account for these and similar findings."

Levine has interpreted the theory of sex-role identification offered by Parsons and Bales (1955). He states that under the terms of this theory, fathers of male TMR children "...would be more likely to be faced with personal crises than fathers of retarded females. In part, this is so, because one important aspect of identification is a physiological capacity of boys to reproduce male behaviors (Hendrick, 1951)." Since a male TMR child would not be perceived as capable of fulfilling male roles, he would be devalued by his father and perceived as less adequate than a female TMR child. On the other hand, mothers are not likely to have differentiated emotional reactions to their retarded children because of their sex. As Johnson (1963) states, the mother thinks of both children in light of her general nurturant and supportive role in the family. Therefore, mothers would not be likely to devalue retarded males and would perceive them as more capable than their fathers would.

In order to provide an indirect test for this hypothesis, Levine interviewed mothers and fathers independently in their homes, checking behaviors included in the San Francisco Social Competency Scale (Cain and Levine, 1961). This scale assesses four aspects of social competency: Self Help, Initiative Responsibility, Social Skills and Communication. It is an earlier version of the Cain Levine Social Competency Scale (Cain, Levine and Elzey, 1963). The parent himself, however, did not complete the scale under the method used by Levine. Instead, the parent described the child's "...typical behavior relative to each item and the interviewer, through questioning, arrives at a rating which is characteristic of the child's performance." Levine's hypotheses were supported on the basis of a higher correlation coefficient between parents of female children as opposed to a lower correlation on male children. However, both correlations were high and positive (.90 for females; .76 for males). More agreement between the mother's and father's perception of improvement in the social competence of female TMR children than between their comparable perception of TMR male children was predicted and supported by the ..." difference between the means of the discrepancy scores of fathers' and mothers' ratings of improvement in social competence..." Levine suggested further research to replicate his conclusions and to determine if Socio-Economic Status (SES) influenced ratings of TMR children by their sex.

One purpose of the current investigation was to replicate Levine's conclusions using a similar, but modified, method. Would parents of TMR female children have higher agreement in their initial ratings of the child's social competency and their perception of improvement of the child over time than parents of TMR male children? Another purpose of the present study was to determine if the teachers of TMR children agreed with the parents concerning the child's social competency. Would the teachers give differential perceptions related to the child's sex? Would the teachers perceive growth in social competency at the same rate as the parents did? Finally, the current study attempted to determine whether families of dichotomized SES would show difference in their perception of their TMR children. Would SES interact with the TMR child's sex? Would parents in each SES agree with the teacher's ratings of social competency of their children initially and over time?

METHOD

Subjects:

A sample of 291 subjects was chosen from a larger data pool of 657 TMR children previously selected for Federal Project #5-1051. The sample chosen contained 172 males and 119 females. The subjects had a mean Intelligence Quotient (IQ) of 42.3 and a mean chronological age (CA) of 11 years. All of the children selected had been rated by the same person on both the first and second administrations of the Cain Levine Social Competency Scale (CL). There was no difference between the total population and the sample in the proportions of males to females.

For part of the study, the sample was divided into two socio-economic groups on the basis of the father's educational and occupational level.

The High Socio-Economic Status group (HSES) was composed of TMR children whose fathers had all either received a high school diploma, or were employed in sales occupations (05) or above (see Table 78) as defined by the U.S. Bureau of the Census, 1960. It was possible to be categorized HSES without a diploma, but impossible to be categorized Low Socio-Economic Status (LSES) with one. On this basis, 148 families were labeled HSES.

Instruments:

IQ

The IQ's of the TMR children were taken from school records and represent several different tests administered by school diagnosticians. The most common test was the Stanford-Binet, followed by the Goodenough Draw-A-Person and the Wechsler Intelligence Scale for Children.

Cain Levine Social Competency Scale

The perceptions of the mother, father and teacher were derived from the Cain Levine Social Competency Scale (1963) which seeks to measure social competency along "...a dependence-independence continuum." The scale consists of 44 items divided into 4 subscales: Self Help (14 items), Initiative (10 items), Social Skills (10 items) and Communication (10 items).

The CL was standardized on the premise that evaluaters would collect data both by interviewing the parents and by direct observation of the TMR child. The CL was intended for use by teachers and other professionals who seek to measure the status of a TMR child by descriptive behaviors.

For each category and item of the CL the scoring is higher as the child's behavior increases in self-direction. For example, Item #1, Dressing (SH):

1. Cannot put on any clothing
2. Can put on most clothing, can zip, cannot button

TABLE 78
CATEGORIES OF FATHERS' OCCUPATIONS

01	Professional, Technical and kindred workers
02	Farmers and farm managers
03	Managers, Officials and Properieters, except farm
04	Clerical and kindred workers
05	Sales Workers
06	Craftsmen, Foremen and kindred workers
07	Operatives and kindred workers, including factory workers
08	Private household workers
09	Service workers
10	Farm laborers and foreman
11	Laborers, except farm and mine
12	Occupation not reported
13	Student
14	Unemployed

3. Can put on most clothing, can zip and button

4. Completely dresses self, except for shoe tying

5. Completely dresses self, including shoe tying

A sex difference between subjects was found when the test was normed. This necessitated a 2 to 4 point added adjustment score for males, depending on their age. Test-retest reliability coefficients between observers on the subtests were reported by the manual to range from .88 for Social Skills to .97 on Communication.

PROCEDURE

The mother and father of each TMR child completed two CLs for their child, one at the beginning of the school year and the other at the end. The CLs were mailed to the parents, accompanied by instructions requesting that the parents complete the forms independently. (See Appendix D). Parental response to the first administration was 85% but declined to 50% return for the second administration.

The teachers completed three CLs over a two year period. The second and third teacher CLs were selected for this study as they corresponded temporally to the parents' two ratings. The CLs were presented to the teachers by a field representative who requested their cooperation. The teachers were paid to complete the forms for all of the TMR children in their classes.

RESULTS

Table 79 presents the mean scores for the 291 children in the sample according to the three groups of raters. The total scores constitute the totals of the sub-tests for the first (CL1) and second (CL2) administrations. The normative data supplied by the test manual adds two to four points to the Self Help scores of male children depending on age. However, this correction was not used in the present study.

TABLE 79

CAIN LEVINE SOCIAL COMPETENCY SCALE
MEANS AND STANDARD DEVIATIONS BY RATERS
FOR 291 TMR CHILDREN

	CL1		CL2	
RATER	$\bar{X}$	SD	$\bar{X}$	SD
MOTHERS	135.0	23.9	141.2	22.9
FATHERS	132.3	24.1	139.2	23.7
TEACHERS	123.3	30.8	128.2	31.0

Table 80 presents the mean scores by raters for each sub-test, Communication (CM), Social Skills (SS), Initiative (I) and Self Help (SH) for both administrations.

Three-way analyses of variance were performed (rater x sex of child x administration) for each CL sub-test and the total score. In order to perform these analyses it was necessary to equalize the N's for the male and female TMR children in the sample. Consequently, males were randomly eliminated to make the N = 119 for each sex.

The results of the analyses of variance are presented in Tables 81 - 85.

Test-retest Pearson Product Moment correlations for each rater appear in Table 86. The correlations are all positive and statistically significant. The correlations for the fathers were significantly lower on Communication, Social Skills and Initiative than those of the mothers or teachers, but no difference existed between their correlations and those of the other raters on Self Help and the Total Score.

Correlations between the raters for each administration are presented in Table 87. In each administration the correlation between the parents was higher than the correlations between either parent and the teacher. All the correlations are significantly different from zero.

The correlations between the parents and teachers for the Initiative sub-test were significantly lower than any of the other parent-teacher correlations, regardless of administration. The amount of the correlation between either parent with the teacher was about equal; that is, fathers did not correlate higher or lower with the teacher than did the mother with the teacher.

Tables 88 and 89 present the correlations between the raters for both administrations by sex of the TMR child. The correlations between the parents for both male and female children were high and equal for total scores (r = .90 for CL1) and were maintained over time (.92 for males; .91 for females on CL2).

TABLE 80

CAIN LEVINE SOCIAL COMPETENCY SCALE SUB-TEST
MEANS AND STANDARD DEVIATIONS BY RATERS
FOR 291 TMR CHILDREN

	CM		SS		I		SH		
RATER	X	SD	X	SD	X	SD	X	SD	
MOTHERS	32.1	5.9	29.9	6.3	29.2	6.6	43.8	9.7	First Administration
FATHERS	31.3	6.5	29.2	6.4	28.4	6.5	43.1	9.8	
TEACHERS	28.7	7.0	25.8	7.9	28.0	7.7	40.7	12.4	
MOTHERS	32.9	6.1	31.1	6.3	29.2	6.6	43.8	9.7	Aecond Administration
FATHERS	32.5	6.1	30.7	6.5	28.4	6.5	43.1	9.8	
TEACHERS	29.5	7.2	26.9	8.1	28.0	7.7	40.7	12.4	

TABLE 81

ANALYSIS OF VARIANCE

TOTAL SCORE

RATERS x SEX x ADMINISTRATION

SOURCE	DF	MS	F
Raters (A)	2	18352.00	13.82**
Sex (B)	1	80.00	0.60
Administration (C)	2	12416.00	133.74**
A x B	2	200.00	0.15
A x C	2	176.00	1.89
B & C	1	0.00	0.00
A x B x C	2	8.00	0.08

** P.01

TABLE 82

ANALYSIS OF VARIANCE

COMMUNICATION

RATERS x SEX x ADMINISTRATION

SOURCE	DF	MS	F
Raters (A)	2	1540.00	19.14**
Sex (B)	1	75.00	0.93
Adminstration (C)	2	344.00	44.71**
A x B	2	11.50	0.14
A x C	2	9.00	1.16
B x C	1	0.00	0.00
A x B x C	2	0.50	0.06

** -.01

TABLE 83

ANALYSIS OF VARIANCE

RATERS x SEX x ADMINISTRATION

SOURCE	DF	MS	F
Raters (A)	2	2365.00	26.75**
Sex (B)	1	7.00	0.07
Administration (C)	2	488.00	47.32**
A x B	2	24.00	0.27
A x C	2	4.50	0.43
B x C	1	3.00	0.29
A x B x C	2	1.50	0.14

** 0.01

TABLE 84

ANALYSIS OF VARIANCE

INITIATIVE

RATERS x SEX x ADMINISTRATION

SOURCE	DF	MS	F
Raters (A)	2	120.50	1.39
Sex (B)	1	109.00	1.26
Administration (C)	2	903.00	67.24**
A x B	2	37.50	0.43
A x C	2	28.50	2.12
B x C	1	2.00	0.14
A x B x C	2	1.00	0.07

** P.01

TABLE 85

ANALYSIS OF VARIANCE

SELF HELP

RATERS x SEX x ADMINISTRATION

SOURCE	DF	MS	F
Raters (A)	2	1485.50	7.07**
Sex (B)	1	5.00	0.02
Administration (C)	2	1881.00	139.14**
A x B	2	10.50	0.05
A x C	2	23.50	1.73
B x C	1	5.00	0.36
A x B x C	2	3.00	0.22

** P.01

TABLE 86

CORRELATIONS OF FIRST AND SECOND RATINGS OF TMR CHILDREN BY MOTHERS, FATHERS AND TEACHERS*

(N=291)

	MOTHERS	FATHERS	TEACHERS
Cain Levine Total	.86	.83	.89
Communication	.83	.71	.87
Social Skills	.80	.68	.84
Initiative	.74	.61	.84
Self-Help	.88	.85	.90

*Time interval between administrations was 6 to 8 months.

TABLE 87

CORRELATION BETWEEN RATERS FOR BOTH CAIN LEVINE ADMINISTRATIONS TOTAL AND SUB-TEST SCORES

	FIRST ADMINISTRATION			SECOND ADMINISTRATION		
	Parents	Mothers & Teachers	Fathers & Teachers	Parents	Mothers & Teachers	Fathers Teachers
Cain Levine Total	.90	.66	.63	.91	.58	.61
Communication	.81	.64	.61	.88	.69	.70
Social Skills	.79	.57	.51	.86	.53	.53
Initiative	.85	.42	.42	.71	.33	.33
Self Help	.93	.71	.66	.88	.63	.60

TABLE 88
CORRELATION BETWEEN RATERS ON THE FIRST CAIN LEVINE ADMINISTRATION BY SEX OF THE TMR CHILD

	Males			Females		
	PARENTS	MOTHER & TEACHER	FATHER & TEACHER	PARENTS	MOTHER & TEACHER	FATHER & TEACHER
Cain Levine Total	.90	.63	.59	.90	.70	.68
Communication	.77	.57	.52	.86	.74	.73
Social Skills	.77	.58	.49	.82	.57	.54
Initiative	.87	.40	.37	.82	.45	.48
Self Help	.94	.72	.68	.90	.71	.64

TABLE 89

CORRELATION BETWEEN RATERS ON THE SECOND CAIN LEVINE ADMINISTRATION BY SEX OF THE TMR CHILD

	Males			Females		
	PARENTS	MOTHER & TEACHER	FATHER & TEACHER	PARENTS	MOTHER & TEACHER	FATHER & TEACHER
Cain Levine Total	.92	.58	.61	.91	.60	.62
Communication	.88	.67	.67	.86	.72	.74
Social Skills	.84	.50	.53	.90	.57	.55
Initiative	.83	.35	.37	.58	.30	.29
Self Help	.92	.63	.63	.83	.64	.58

The division of the sample into socio-economic categories resulted in 148 LSES subjects (84 males, 64 females) and 143 HSES subjects (88 males, 55 females).

Table 90 presents mean comparisons between the categories by IQ and CA in months.

Incomplete data resulted in lower N's for each category than the number of subjects in the actual sample. There were no significant differences between social class groups on IQ (t = 71; p .05) or CA (t = .80; p .05).

Mean data by the raters for the LSES category is presented in Table 91. The rank order position of the raters in relation to one another is the same as in the combined sample. That is, mothers rated the children highest, followed by fathers and then teachers. One exception was found in which fathers were 1/10 of a point higher than mothers on the second administration of the Initiative subscales.

Table 92 presents mean ratings of HSES TMR children. As in the corresponding data for LSES children, the position of the raters conforms to the combined sample. No "interaction" effects were found in the sub-tests that would lead to exceptions to this generalization.

Tables 93 through 97 present three-way analyses of variance for Raters x Socio-economic Status x Administration. Again, equal N's were required for each social class, so five S's were randomly eliminated from the HSES to make N = 143 for each group.

DISCUSSION

Levine (1966) has concluded that more agreement will be evident between parents rating TMR female children than between parents rating TMR male children on a scale designed to rate social competence. These differences concern both initial ratings and comparison ratings over time to reflect improvement in this trait.

TABLE 90

MEAN COMPARISONS BY IQ AND CA
OF HSES AND LSES GROUPS

	MEAN IQ	SD	N	MEAN CA	SD	N
HSES	41.89	9.02	127	130	44.01	144
LSES	42.69	9.07	130	134	40.87	145

TABLE 91

MEANS AND STANDARD DEVIATIONS BY MOTHERS, FATHERS AND TEACHERS OF LSES

TMR Children for Cain Levine Total Sub-Test Scores, CL1 - CL2

	MOTHER				FATHER				TEACHER			
	CL1		CL2		CL1		CL2		CL1		CL2	
	MEAN	SD	MEAN	SD	MEAN	SD	MEAN	SD	MEAN	SD	MEAN	SD
CL Total	137.1	23.2	143.1	22.5	134.4	24.0	141.7	24.0	128.0	31.1	132.7	31.4
CM	32.0	6.0	32.9	6.2	31.1	6.8	32.6	6.5	29.2	7.1	29.6	7.6
SS	30.4	6.3	31.8	6.1	29.7	6.6	31.5	6.4	27.1	7.8	27.9	8.0
I	29.4	6.5	30.8	6.3	28.9	6.6	30.9	8.2	28.8	7.5	30.2	7.4
SH	45.3	9.4	47.6	8.7	44.2	9.9	47.0	9.5	42.7	13.6	44.8	12.1

N = 143

TABLE 92

MEANS AND STANDARD DEVIATIONS BY MOTHERS, FATHERS AND TEACHERS OF HSES

TMR Children for Cain Levine Total Sub-Test Scores, CL1 - CL2

	MOTHER				FATHER				TEACHER			
	CL1		CL2		CL1		CL2		CL1		CL2	
	MEAN	SD	MEAN	SD	MEAN	SD	MEAN	SD	MEAN	SD	MEAN	SD
CL Total	132.8	24.4	139.2	23.3	130.1	24.0	136.6	23.1	118.5	29.8	123.7	30.1
CM	32.3	5.9	32.9	6.0	31.4	6.2	32.5	5.7	28.2	6.8	29.3	6.8
SS	29.4	6.4	30.4	6.5	28.8	6.2	29.9	6.5	24.4	7.8	25.9	8.1
I	29.0	6.7	30.6	5.9	27.8	6.4	29.6	6.6	27.3	7.7	28.4	7.5
SH	42.3	9.7	34.0	8.9	41.9	9.6	44.4	9.1	38.6	11.8	40.1	11.8

N = 148

TABLE 93
ANALYSIS OF VARIANCE
TOTAL SCORE
RATERS x SES x ADMINISTRATION

SOURCE	DF	MS	F
Raters (A)	2	24776.00	19.42 **
SES (B)	1	15600.00	12.23 **
Administration (C)	2	15808.00	170.95 **
A x B	2	1072.00	0.84
A x C	2	152.00	1.64
B x C	1	16.00	0.17
A x B x C	2	0.00	0.00

** $p < .01$

TABLE 94
ANALYSIS OF VARIANCE
COMMUNICATION
RATERS x SES x ADMINISTRATION

SOURCE	DF	MS	F
Raters (A)	2	1912.00	24.96 **
SES (B)	1	7.00	0.09
Administration (C)	2	414.00	50.86 **
A x B	2	37.00	0.48
A x C	2	13.00	1.59
B x C	1	1.00	0.12
A x B x C	2	14.00	1.72

** $p < .01$

TABLE 95
ANALYSIS OF VARIANCE
SOCIAL SKILLS
RATERS x SES x ADMINISTRATION

SOURCE	DF	MS	F
Raters (A)	2	3166.50	36.28 **
SES (B)	1	1175.00	13.46 **
Administration (C)	2	700.00	66.56 **
A x B	2	44.00	0.50
A x C	2	9.50	0.90
B x C	1	0.0	0.0
A x B x C	2	16.00	1.52

** $p < .01$

TABLE 96
ANALYSIS OF VARIANCE
INITIATIVE
RATERS x SES x ADMINISTRATION

SOURCE	DF	MS	F
Raters (A)	2	241.00	2.83
SES (B)	1	467.00	5.49 *
Administration (C)	2	1096.00	82.52 **
A x B	2	68.00	0.80
A x C	2	16.00	1.20
B x C	1	7.00	0.52
A x B x C	2	2.50	0.18

* $p < .05$
** $p < .01$

TABLE 97
ANALYSIS OF VARIANCE
SELF HELP
RATERS x SES x ADMINISTRATION

SOURCE	DF	MS	F
Raters (A)	2	1973.00	9.80 **
SES (B)	1	4407.00	21.89 **
Administration (C)	2	2317.00	171.34 **
A x B	2	163.50	0.81
B x C	1	4.00	0.29
A x B x C	2	9.50	0.70

** $p < .01$

The current data do not support these conclusions either on the basis of correlation coefficients (Tables 88 and 89) for both administrations of the scale, or on the basis of the analysis of variance (Tables 81 - 85). Summary conclusions are presented as follows:

(1) The correlations between the parents for both male and female children were high and equal for total scores ($r = .90$ for CL1) and were maintained over time (.92 for males, .91 for females on CL2).

(2) The sex of the TMR child did not interact with the rater. None of the subject-rater interactions were significant for any test.

(3) There were no significant differences between the mean scores of male TMR children and female TMR children. As a corrollary to this result, it is important to note that the teachers did not rate the children differentially by sex.

These results are interesting to note since the instrument used to collect data in the current sample was similar to that used by Levine in his 1966 study. In addition, the normative population of the CL reported sex differences necessitating a 2 to 4 point added adjustment score for males, depending on their ages.

Differences in the method for administering the instrument may account for part of these conflicting results. Levine's data collection involved interviewers who, it is assumed, were acquainted with the theory that father's should be expected to devalue male TMR children. Rosenthal's (1966) studies of investigator expectancy suggest that unconscious cues given by investigator may influence results in predicted directions. The current study did not rely on interviewers and no difference was found between TMR children by sex. Collusion between parents was possible, but the correlations between them range from .71 to .9[illegible].

It is not necessary, however, to conclude that all of the sex differences reported by the CL manual and Levine's work were a result of interviewer expectancy. The discrepancy in the findings may reflect a qualitative difference between the regions in their definition of a TMR child.

The Relationships Between the Raters

Tables 79, 91 and 92 show the means of the raters for all children and for all children divided by SES. Regardless of the method of categorizing the TMR children, the position of the raters remained constant. That is, mothers rated the children the highest, followed by the fathers and then the teachers who rated the children the lowest.

In order to account for these results, it seems advisable to return to an earlier statement concerning the possibility that parents and teachers comprise a small decision-making group engaged in supervising and sheltering the TMR child. Parsons and Bales (1955) have stated that groups have a hierarchical leadership strata oriented around two types of leaders who perform separate but mutually dependent functions. One leadership role concerns the achievement of a group goal or task, and the leader in this function is termed the instrumental or task leader. The other leadership role concerns the maintenance of the group itself, and the leader in this function is termed the socio-emotional leader.

If it may be assumed that mothers, fathers and teachers form a decision-making group, then role functions may be ascribed to each and used to account for their ratings. Within this conceptual framework, mothers would be viewed as the socio-emotional leaders of the group. Most of their group functions would be oriented toward keeping the group intact, using optimism as a working tool. When mothers rated their TMR children, their optimism would be reflected in their ratings, as compared to the other two raters. Consequently, they would rate the children the highest.

Teachers would be viewed as the task leaders, identifying with an objective, professional role. They could not justify optimism to the degree that the mother (or the father) could and consequently would rate the children lowest.

Fathers would identify with both of these roles. On the one hand they would like to be optimistic about their children, but on the other hand they must play task roles in the family itself and are acquainted with demands that may be made of the children outside the family. Their ratings of their children would be viewed as a compromise in that they would follow both group leaders, but would not assume a leadership function of their own.

Accounting for differences between the raters on the basis of their role functions implies that their relationship is based on the skills they bring into the decision making group.

The differences between the raters were statistically significant for the total CL scores and all sub-tests except Initiative (Table 78). The rank of the raters remained mother, father and teachers, but mean differences did not exist. It was noted that the correlations between either parent and the teacher for Initiative were significantly positive, but that they were lower than the correlations for any other sub-test (Table 87).

This Initiative sub-test, according to the manual, reflects the TMR child's ability to assume self-direction. It is possible that less agreement was present between the raters on this subtest although mean differences were not present.

Socio-Economic Status (SES)

Often children of LSES are hypothesized to be devalued by schools, since their life styles supposedly conflict with the superimposed middle class values of the school system. Applying this theory to the current study, it could be predicted that the HSES TMR children would receive higher ratings on the scale than LSES TMR children, when they were rated by teachers.

However, the data revealed that LSES children were rated higher than HSES children, not only by teachers but by their parents as well. From Tables 93 through 97 concerning 3-way analyses of variance (raters x SES x administration) the following summary statements can be made:

(1) Significant differences existed between the raters at the .01 confidence level for all scores except the sub-test Initiative;

(2) Significant differences existed between the SES groups for all scores except the sub-test Communications;

(3) The TMR children of both SES groups gained significantly and equally over administrations;

(4) No significant interactions were observed.

For each SES group, the position of the raters to one another was identical to their positions in the combined sample. Mothers rated the children the highest, followed by the fathers and then the teachers. IQs or CA's of either SES group as mean differences (Table 90) did not exist.

SUMMARY

This study compared the ratings of mothers, fathers and teachers of TMR children on two administrations of the Cain Levine Social Competency Scale given over a 6 - 8 month interval. Part of the purpose of the investigation was to replicate Levine's (1966) findings that fathers tend to devalue male TMR children. The parents and teachers were given the scales and asked to rate, independently, their TMR child on the four subscales Communication, Social Skills, Initiative, and Self Help. The results were examined using three-way analyses of variance and Test-Retest Pearson Product Moment Correlations. Levine's findings were not supported, as the sex of the TMR child did not interact with the rater and there were no significant differences between the mean scores of male and female TMR children. Subjects were also categorized according to socio-economic status with the expectation that low socio-economic status TMR children would be devalued by their middle class teachers. However, the results showed that low socio-economic status TMR children were rated higher than high socio-economic status TMR children by both their teachers and their parents.

*This related study was conducted by Philip Van Every, University of Michigan.

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RELATED STUDY 6

THE CAIN-LEVINE COMPETENCY SCALE: AN EXTENSION OF NORMS*

THE CAIN-LEVINE COMPETENCY SCALE: AN EXTENSION OF NORMS

The Cain-Levine Social Competency Scale (CL) was developed in order to provide a means of assessing changes in the behavior of trainable mentally retarded (TMR) individuals within the range of abilities they might be expected to attain (Cain, Levine, and Elzey, 1963). Based on Kirk's (1957) summary of behavioral goals for the TMR child, the items of the Scale have been divided into four subscales: Communication (C), Social Skills (SS), Initiative (I), and Self-Help (SH). Behavioral items for the Scale were drawn from an analysis of major curriculum guides developed by public schools and institutions for use with the TMR, consultation with professionals experienced in working with TMR children, discussions with parents of TMR children, and an evaluation of existing scales and tests. Criteria used for selection of items included:

1. Rank-order agreement of judges on relative difficulty of item alternatives;

2. Unidimensionality of each item for content and aspect of social competency;

3. At least four levels of scaling on an item to show increments in social competency;

4. Absence of value judgments or cultural bias in behavioral statements;

5. Selection of behaviors observable in the home and rateable by parents;

6. Equal applicability of items to both sexes.

The scale in its present form was standardized in California on 716 TMR children ranging in chronological age (CA) from 5-0 through 13-11 years. Those children of age 8-0 or older were enrolled in public school programs in California. Intelligence quotients for this sample ranged from 25 through 59 and mental ages ranged from two through seven years.

It is becoming increasingly more common for TMR children to remain in public school programs until age 21 and to be involved in community programs for the retarded even beyond this age. Therefore, the present investigators felt that an attempt should be made to extend the percentile conversion tables for the CL to apply to TMR children older than 13-11 in order that changes in behavior of those older individuals might be evaluated in relation to the behaviors possessed by other TMR individuals of equivalent chronological age.

As one aspect of a study of characteristics of teachers of the TMR which are associated with progress in TMR children, the CL was completed by teachers of TMR subjects (*Ss*) on three separate occasions. Only *Ss* who had been included in the first sample were included in the second, and only *Ss* for whom the Scale had been completed in 1965 and 1966 were included in the third administration. At the time of the first administration in November, 1965, the sample consisted of 965 TMR children ranging in CA from 5-1 to 30-10 years. When the Scale was completed for the second time, in November, 1966, there were 771 *Ss* still in the sample, ranging in CA from 6-1 to 31-10 years. There were 657 *Ss* in the sample, with a CA range from 6-7 to 32-4 years, at the time of the third administration in May, 1967.

Ss were divided into nine groups by sex and by CA. Each group represented a range of two years, with the last group including all *Ss* with CA of 21-0 and above. Subsscale scores of the CL and the total score on the Scale were analyzed to determine the following indices for each CA and Sex group: mean and standard subscale and full-scale total scores; mean response and frequency distribution of responses to each item; discriminating ability of items (mean score for the upper and lower 1/3 of individuals for each item); T-score equivalents of raw scores. The adjustment for males on the Self-Help subscale was omitted. Appendix A indicates the mean, SD and size of each group for each subscale and full-scale total at each administration. The means and standard deviations were plotted for each subscale for the total scale across sex and CA groups (See Appendix B). An analysis of variance revealed no significant difference between males' and females' scores on any subscales for the total ($F=0.60, p>05$) Due to the similarity of curves for males and females and the nearly zero slope of the curves at CA above 204 months

(17-0 years), it was decided to combine male and female scores and to collapse the three top CA categories into one category representing all individuals with a CA of 204 months and above. No adjustment scores were found to be necessary to equate scores of male and female Ss on any subscales. The above mentioned analysis of scores was repeated for these seven new groups for each subscale and the total score. Appendix C contains the mean and standard deviations of the scores, and the N of each group for the four subscales and the full scale for each administration. The mean score for each CA group was plotted for each administration. Examination of these graphs in Appendix D, reveals a general tendency for Ss to score higher on the second administration of the CL than on the first, and higher on the third administration than on the second. That is, at any CA level, scores tend to increase as the children being tested spend more time in an educational program. Differences between performance on administrations one and three were statistically significant when tested at the two extreme CA points and at CA 156-179 months (CA 60-83: $t=1.67$, $p<05$; CA 156-179: $t=1.83$, $p<05$; CA 204+: $t=2.82$, $p<005$).

It is possible that the discrepant scores for the 156-179 month groups might be due to performance by a particular group of Ss, or to effects of special characteristics of the classes for Ss in this CA range. That is, an intensive training program for Ss who were 13 to 15 years-old at the time of first testing may, if present have resulted in relatively greater progress by these youths during the first year. At the second testing, some of these Ss would have moved into the 180-203 month CA level, resulting in an increased gain by that group and a decreased gain by the 156-179 group. On the third administration -- 18 months after the first -- nearly all children from the "special" group would be in the higher CA levels, yielding a greater gain for these levels and a smaller gain for the lower---CA 156-179 -- group. An examination of the data showed no tendency for Ss achieving high scores on the CL to come from one school or one school district. Thus, it is unlikely that the phenomenon in question resulted from participation of the Ss involved in a single, especially effective program prior to testing.

The general trend toward higher CL scores as a function of amount of time spent in an educational program would seem to indicate that different sets of norms should be used as referents for Ss performance when the time spent in an educational program varies. Three sets of tables of percentile equivalents of CL raw scores are provided. Appendix E represents performance at first testing, (not necessarily at the first year in an educational program). Appendix F indicates percentile equivalents of scores obtained on a second evaluation with the instrument (obtained here one year after the first evaluation). Appendix G contains tables of percentile ranks of scores on a third administration of the Scale (completed 18 months after the first administration in the normative sample).

The mean scores at each CA level were averaged across the three administrations and the resulting single set of mean CL raw scores was plotted at each age level for each subtest and the total score. The means derived by Cain, Levine and Elzey (1963) from their "best-fit" curves were plotted on the same axes as the means derived from the Wayne County data. Graphs of these values are presented in Appendix H. It is clear that the two samples are very similar with respect to ratings on the Cain Levine Scale. The mean score is lower at the first age level for the original normative sample than for the members of the current study. However, the age range is different at the first level for the two samples: The Cain, Levine and Elzey sample includes children of CA 5-0 to 5-11 years while the Wayne County sample includes children CA 5-0 to 6-11 years. It is likely that the presence of older children in the current sample accounts for the higher score. Except for this initial age level difference, however, the two sets of curves are very similar. It seems reasonable to assume, therefore, that the performance of TMR children tested in the present study who are older than those in the original normative sample may be used to extend the original set of norms, since the two samples seem very comparable.

It is possible, however, that the items in the Cain-Levine Scale do not represent a sufficient degree of difficulty to allow extension to older TMR children. The percentage of Ss in the top three CA groups scoring within two points or within five points of the maximum possible score for each subscale is presented in Appendix I -- Table 1. It appears that there is a definite tendency for older Ss to score at or near the maximum number of points possible on the subscales, although Social Skills items seem to represent a sufficient range of difficulty to avoid this ceiling effect to the degree found in the other subscales. Examination of the Total scores, however, reveals that while relatively few Ss obtained maximum scores on all subscales, a fairly high percentage received scores in the top 15% of possible scores (Appendix I -- Table 2). Thus, older, more capable TMR individuals may be performing at a level higher than that represented by items on this test and it is necessary to be alert for possible ceiling effects in administration of CL scales to these individuals.

SUMMARY:

The norms for the Cain-Levine Social Competency Scale were extended to cover the performance of TMR individuals older than those in the original normative sample. *S*s ranged in age from 5-1 years through 32-4 years and were from a group of students in school programs for the TMR in the Wayne County Intermediate School District in Michigan.

In contrast to the findings of Cain, Levine and Elzey (1963), there were no significant differences in the scores obtained by males and females in the present sample on any of the subtests or the total score. Thus, no adjustment scores were necessary to equate the performance of the two groups and it was possible to combine the scores for males and females for the calculation of percentile equivalents and for comparison with the original normative sample.

The means of scores at each age level were very similar for the Wayne County sample and for the original sample used by Cain, Levine and Elzey. For this reason, extension of the norms to cover performance of older TMR individuals appeared to be justified. Examination of scores, however, revealed that older, more capable *S*s may be performing at level beyond that represented by the items on the test. Future users of this scale are cautioned, therefore, to be alert for possible ceiling effects in the scores of older *S*s which will not provide an adequate characterization of their abilities.

*This study was conducted by Diane Greenough, University of Michigan.

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Appendix A: Summary scores for males and females.

Table 1.	Administration 1: Mean and standard deviation of score and size of group for male *S*s.
Table 2.	Administration 1: Mean and standard deviation of scores and size of group for female *S*s.
Table 3.	Administration 2: Mean and standard deviation of scores and size of group for male *S*s.
Table 4.	Administration 2: Mean and standard deviation of scores and size of group for female *S*s.
Table 5.	Administration 3: Mean and standard deviation of scores and size of group for male *S*s.
Table 6.	Administration 3: Mean and standard deviation of scores and size of group for female *S*s.

TABLE I

ADMINISTRATION I: MALES
MEAN & STANDARD DEVIATION
OF SCORE AND SIZE OF GROUP

CA (in months)		SH	I	C	SS	TOTAL
60 - 83	Mean	26.378	20.267	23.556	18.067	88.267
	SD	7.703	6.479	8.737	5.833	24.886
		N = 45				
84 - 107	Mean	31.812	22.000	26.910	20.639	101.361
	SD	9.155	6.776	7.223	6.823	25.553
		N = 133				
108 - 131	Mean	36.524	26.056	28.468	23.952	115.000
	SD	11.648	8.541	7.397	7.791	31.149
		N = 126				
132 - 155	Mean	43.374	29.626	31.768	27.566	132.333
	SD	11.377	7.2284	6.138	8.134	29.432
		N = 99				
156 - 179	Mean	48.762	31.400	31.787	29.800	141.750
	SD	10.373	6.819	6.137	6.998	26.994
		N = 80				
180 - 203	Mean	50.241	30.759	32.121	29.741	142.860
	SD	9.267	6.557	7.318	7.134	26.064
		N = 58				
204 - 227	Mean	51.167	30.792	32.458	29.583	144.000
	SD	7.642	6.227	5.985	5.602	21.030
		N = 25				
228 - 251	Mean	45.667	30.556	30.667	30.556	137.444
	SD	7.746	6.167	7.810	6.502	22.356
		N = 9				
252+	Mean	47.500	34.667	32.667	32.667	147.500
	SD	10.134	3.983	5.645	7.448	20.452
		N = 6				

TABLE 2

ADMINISTRATION I: FEMALES
MEAN AND STANDARD DEVIATION OF SCORES AND SIZE OF GROUP

		SH	I	C	SS	TOTAL
CA	Mean	24.074	17.667	20.889	15.889	78.519
(in months)	SD	6.805	5.805	6.441	4.432	18.717
60 - 83		N = 27				
84 - 107	Mean	33.047	24.453	26.814	22.174	106.488
	SD	10.332	7.741	7.657	6.879	28.901
		N = 86				
108 - 131	Mean	37.655	26.810	28.786	24.988	118.238
	SD	11.646	9.439	8.167	8.604	34.367
		N = 84				
132 - 155	Mean	41.121	28.182	28.621	25.091	123.015
	SD	11.747	7.526	7.532	7.813	30.683
		N = 66				
156 - 179	Mean	48.250	30.361	32.556	30.056	141.222
	SD	11.599	7.461	6.389	7.924	29.818
		N = 36				
180 - 203	Mean	48.187	29.813	30.979	28.396	137.375
	SD	11.453	7.905	7.387	7.696	30.326
		N = 48				
204 - 227	Mean	52.421	33.474	35.211	31.737	152.842
	SD	9.924	6.670	4.184	7.078	24.880
		N = 19				
228 - 251	Mean	42.846	27.077	28.231	25.769	123.923
	SD	11.157	5.852	7.748	6.366	26.456
		N = 13				
252+	Mean	46.000	31.167	27.00	27.000	131.167
	SD	8.718	6.940	11.402	11.082	36.994
		N = 6				

TABLE 3

ADMINISTRATION II: MALES
MEAN AND STANDARD DEVIATION
OF SCORES AND SIZE OF GROUP

CA (in months)		SH	I	C	SS	TOTAL
	Mean	30.400	18.600	22.000	15.400	86.400
	SD	9.529	4.722	8.573	4.037	24.224
		N = 5				
84 - 107	Mean	34.667	24.905	28.841	22.635	111.048
	SD	9.862	7.064	6.970	7.380	27.303
		N = 63				
108 - 131	Mean	39.604	28.377	29.764	24.896	122.641
	SD	9.944	7.101	6.334	7.059	26.578
		N = 106				
132 - 155	Mean	42.835	29.388	31.010	27.194	130.427
	SD	12.704	7.774	7.172	8.324	32.233
		N = 103				
156 - 179	Mean	42.622	29.324	31.162	28.635	135.743
	SD	10.818	6.956	6.277	7.151	27.660
		N = 74				
180 - 203	Mean	51.032	31.871	33.113	31.355	147.371
	SD	9.091	5.968	5.125	6.348	22.104
		N = 62				
204 - 227	Mean	51.741	33.593	31.926	32.778	150.037
	SD	8.212	5.686	4.714	6.091	20.920
		N = 27				
228 - 251	Mean	46.429	30.571	31.571	30.429	139.000
	SD	7.133	6.136	6.607	4.345	19.446
		N = 14				
252+	Mean	49.714	35.286	33.571	32.429	151.000
	SD	10.323	4.271	7.502	4.577	16.010
		N = 7				

TABLE 4

ADMINISTRATION II: FEMALES
MEAN AND STANDARD DEVIATION
OF SCORES AND SIZE OF GROUP

CA		SH	I	C	SS	TOTAL
(in months	Mean	30.222	23.556	25.333	20.444	99.556
60-83	SD	4.086	5.897	6.000	3.283	13.145
		N = 9				
84-107	Mean	33.878	25.463	26.463	22.268	108.073
	SD	9.155	7.078	6.690	5.996	23.669
		N = 41				
108-131	Mean	39.606	28.366	29.451	25.394	122.817
	SD	10.281	6.812	6.689	7.015	26.855
		N = 71				
132-155	Mean	43.703	30.162	29.405	27.824	131.095
	SD	11.685	7.594	7.926	7.916	32.047
		N = 74				
156-179	Mean	47.122	31.610	32.415	29.634	140.780
		11.598	5.748	6.241	7.063	27.254
		N = 41				
180-203	Mean	52.667	32.194	32.667	32.028	149.556
	SD	8.390	5.242	6.352	6.199	22.100
		N = 36				
204-227	Mean	51.368	33.526	34.053	32.579	151.526
	SD	9.529	5.787	4.288	6.526	21.251
		N = 19				
228-251	Mean	46.667	29.917	31.500	28.083	136.167
	SD	13.859	5.900	7.268	6.882	29.618
		N = 12				
252+	Mean	46.286	31.571	30.000	30.000	137.857
	SD	10.286	8.059	10.770	11.314	37.795
		N = 7				

TABLE 5

ADMINISTRATION III: MALES
MEAN AND STANDARD DEVIATION
OF SCORES AND SIZE OF GROUP

CA (in months)		SH	I	C	SS	
60-83	Mean	37.000	23.500	22.750	17.750	100.500
	SD	8.756	4.655	7.632	5.315	23.923
		N = 4				
84-107	Mean	36.194	25.833	29.444	23.000	114.472
	SD	9.718	6.358	7.933	6.529	26.036
		N = 36				
108-131	Mean	40.516	29.376	30.387	26.882	127.161
	SD	10.948	7.726	7.234	8.504	31.363
		N = 93				
132-155	Mean	41.843	29.787	30.281	27.202	129.112
	SD	11.583	7.317	6.762	7.982	29.539
		N = 89				
156-179	Mean	46.250	30.562	31.000	28.875	136.687
	SD	11.266	7.603	6.481	8.064	30.336
		N = 64				
180-203	Mean	51.200	32.836	34.636	32.945	151.618
	SD	8.657	5.425	5.024	5.800	20.618
		N = 55				
204-227	Mean	54.083	34.278	33.778	34.000	156.139
		7.485	5.147	5.133	6.356	19.376
		N = 36				
228-251	Mean	50.091	33.818	33.909	32.364	150.182
	SD	6.139	4.262	3.807	4.342	12.197
		N = 11				
252 +	Mean	47.833	31.500	32.167	31.500	143.000
	SD	10.610	6.411	9.453	5.683	24.519
		N = 6				
		CA = 252 +				

TABLE 6

ADMINISTRATION III: FEMALES
MEAN AND STANDARD DEVIATION
OF SCORES AND SIZE OF GROUP

CA (in months)		SH	I	C	SS	TOTAL
60-83	Mean	30.000	28.500	24.500	23.500	106.000
	SD	-	-	-	-	29.698
		N = 2				
84-107	Mean	35.808	27.462	28.115	23.231	114.615
	SD	8.850	6.185	6.947	5.271	23.034
		N = 26				
108-131	Mean	39.848	28.955	29.424	26.106	124.333
	SD	10.598	7.836	6.390	7.502	27.750
		N = 66				
132-155	Mean	44.615	20.442	29.596	27.519	132.173
	SD	10.965	7.742	8.059	8.062	31.025
		N = 52				
156-179	Mean	43.808	30.519	20.115	27.673	132.115
	SD	12.209	6.907	6.416	7.651	29.444
		N = 52				
180-203	Mean	53.345	33.517	33.724	32.828	153.414
	SD	7.311	5.416	6.782	5.366	19.566
		N = 29				
204-227	Mean	52.111	33.389	34.389	32.833	152.722
	SD	8.260	5.972	5.648	6.947	23.830
		N = 18				
228-251	Mean	52.111	35.222	36.556	33.667	157.556
	SD	10.925	5.426	1.944	7.382	22.328
		N = 9				
252 +	Mean	47.889	32.111	27.000	28.556	135.556
	SD	11.241	5.302	9.772	7.435	29.950
		N = 9				

Appendix B: Graphs of means and standard deviations across sex and CA groups.

Figure 1. Administration 1: Total score
Figure 2. Administration 2: Total score
Figure 3. Administration 3: Total score

Figure 4. Administration 1: Communication
Figure 5. Administration 2: Communication
Figure 6. Administration 3: Communication

Figure 7. Administration 1: Initiative
Figure 8. Administration 2: Initiative
Figure 9. Administration 3: Initiative

Figure 10. Administration 1: Social Skills
Figure 11. Administration 2: Social Skills
Figure 12. Administration 3: Social Skills

Figure 13. Administration 1: Self Help
Figure 14. Administration 2: Self Help
Figure 15. Administration 3: Self Help

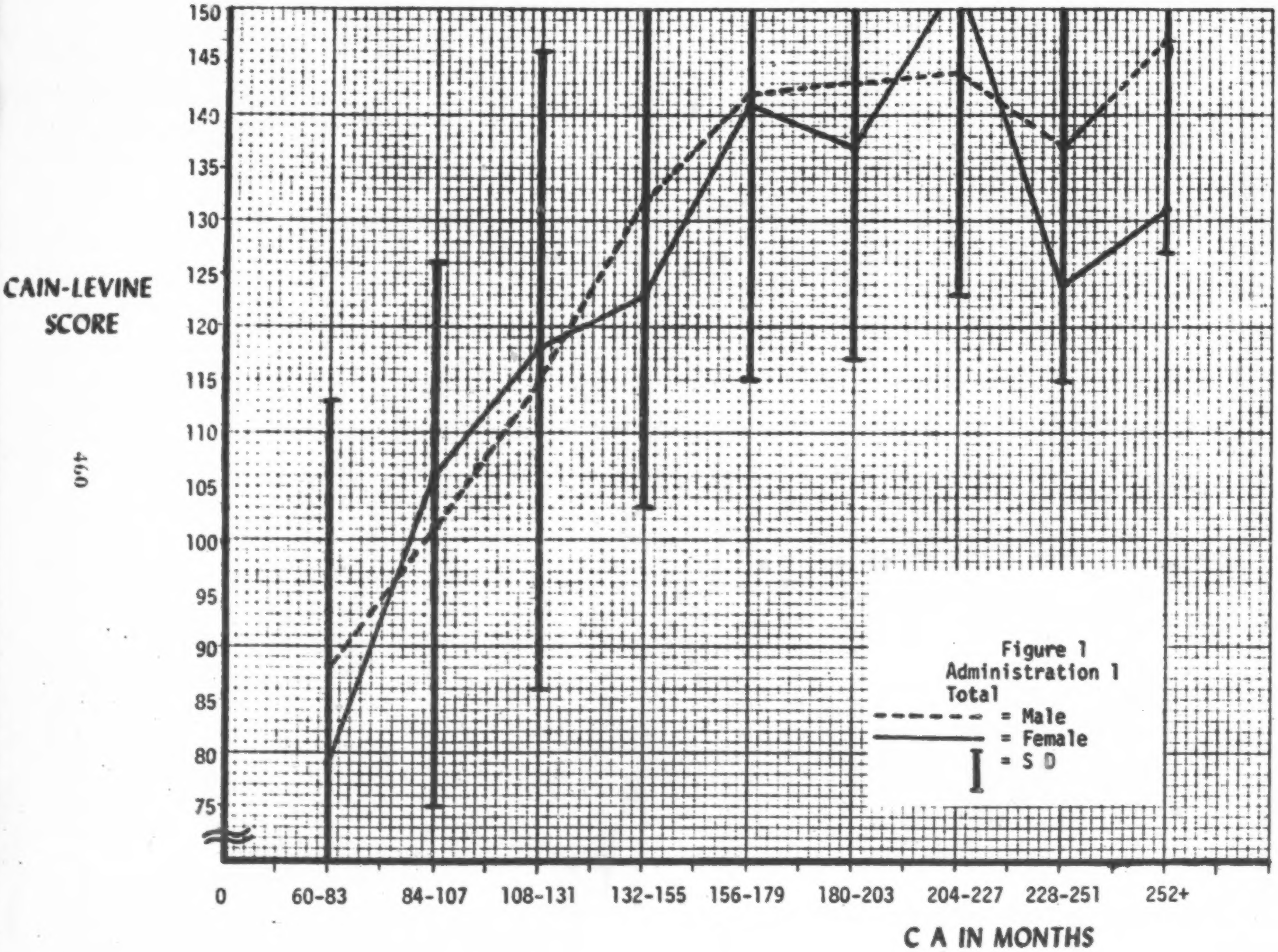

Figure 1
Administration 1
Total

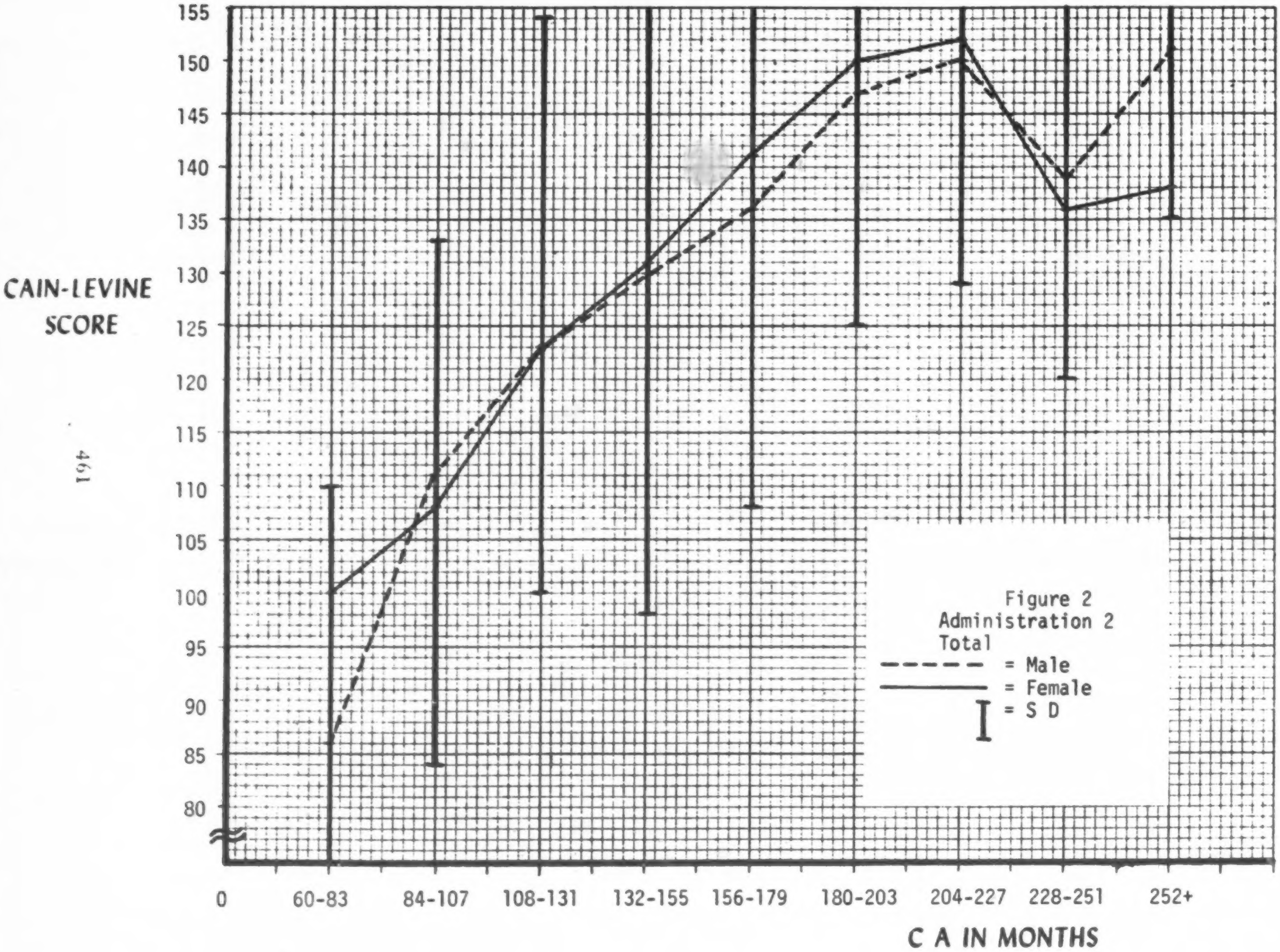

Figure 2
Administration 2
Total

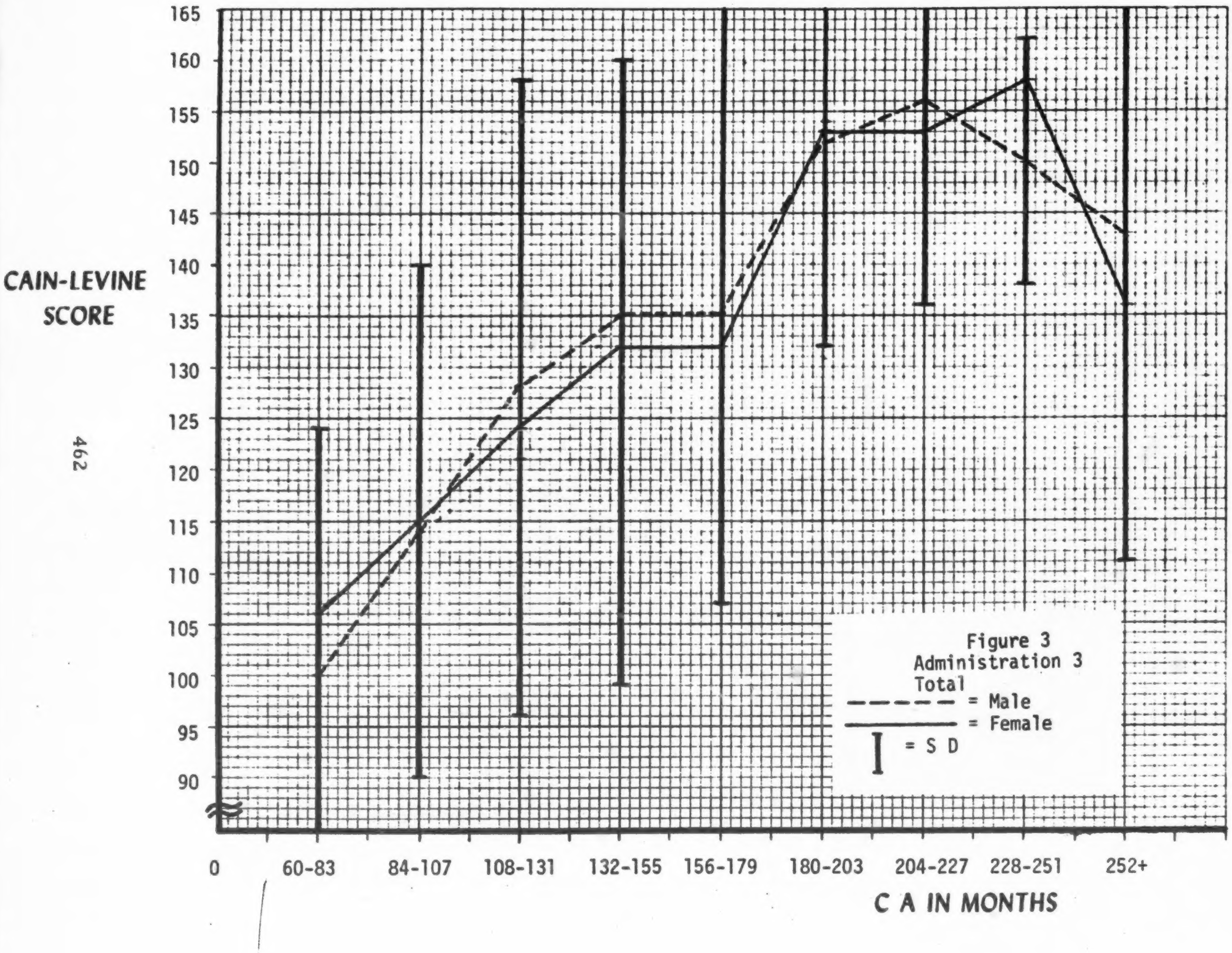

Figure 3
Administration 3
Total

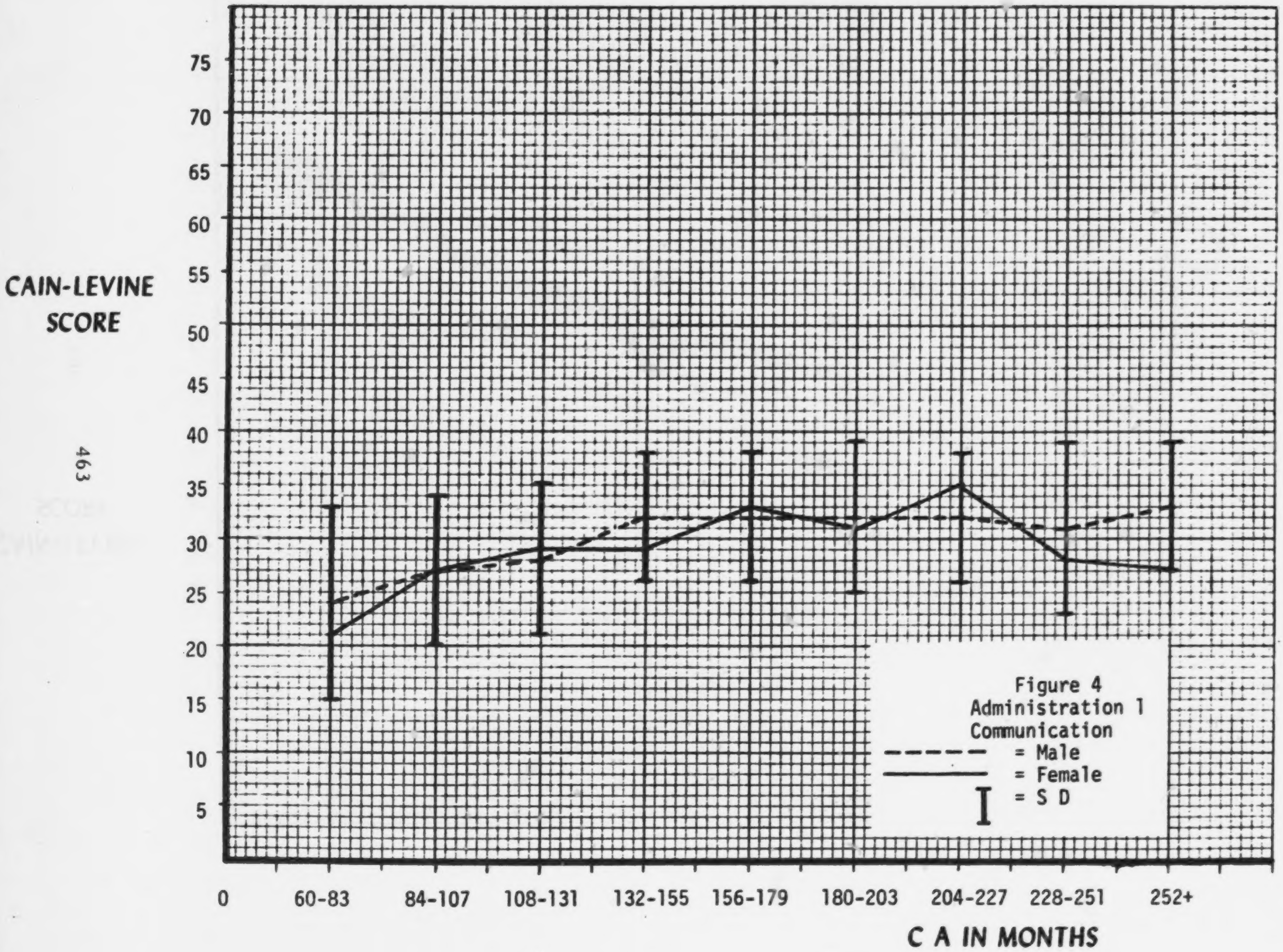

Figure 4
Administration 1
Communication

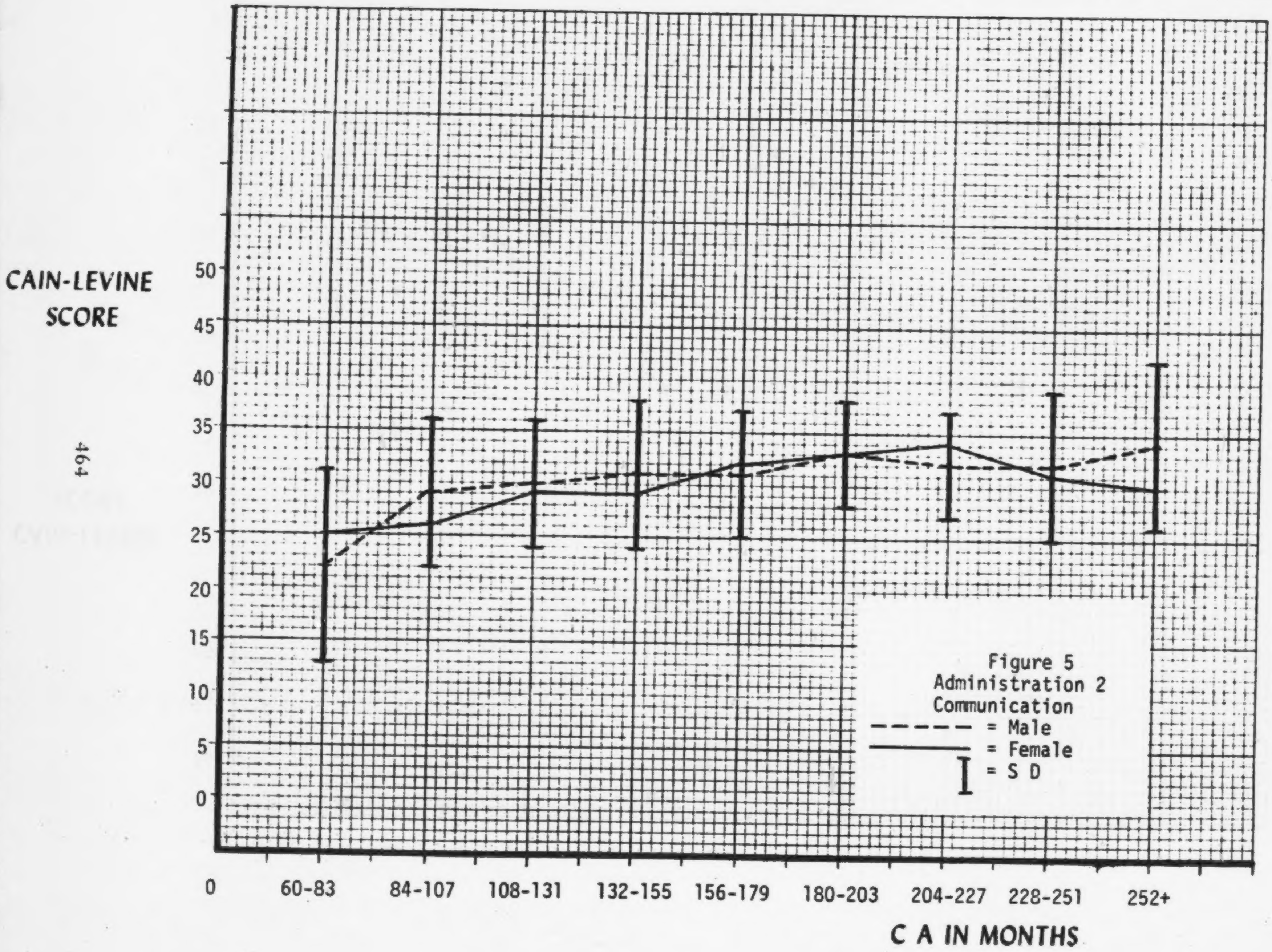

Figure 5
Administration 2
Communication

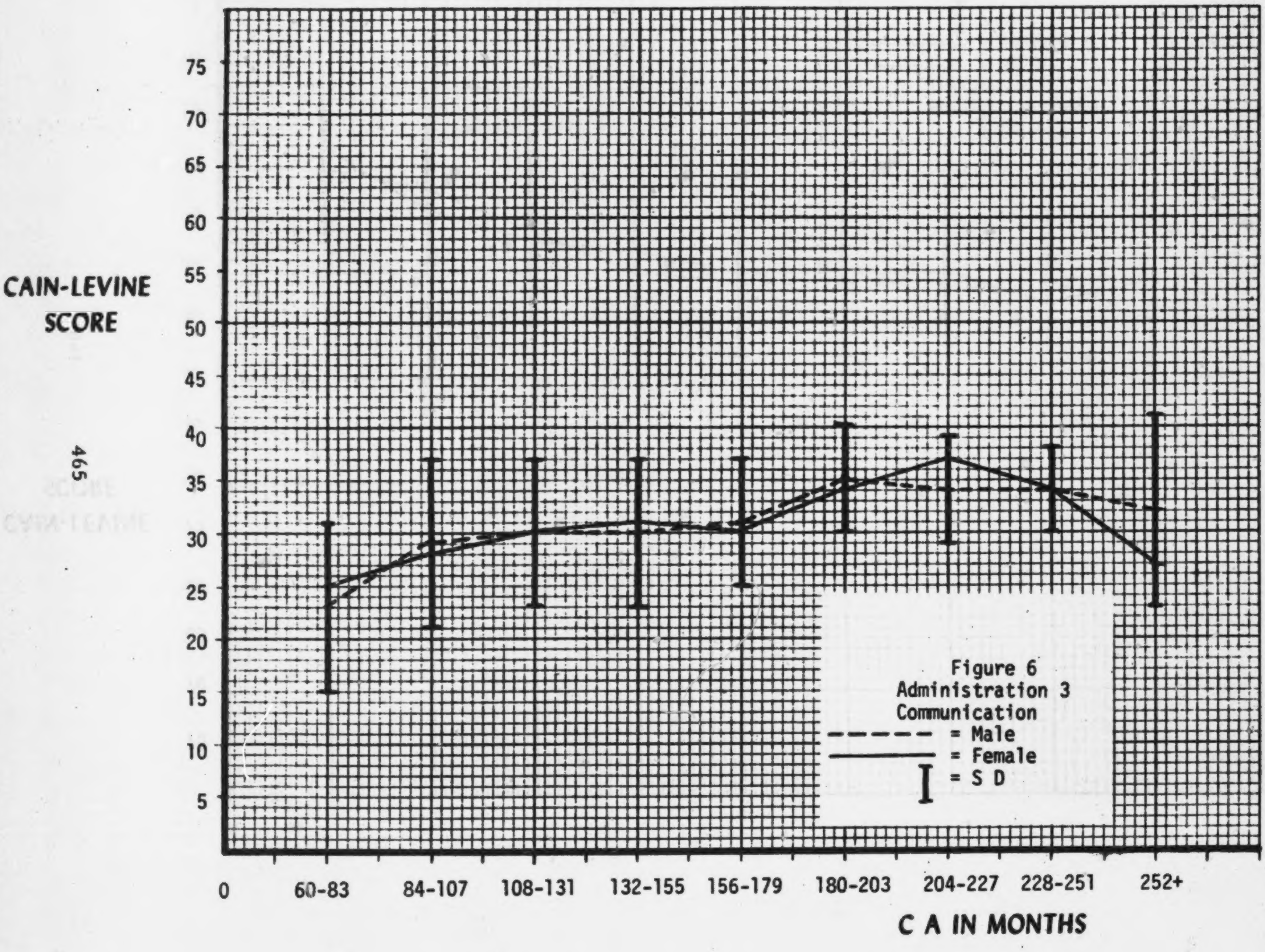

Figure 6
Administration 3
Communication

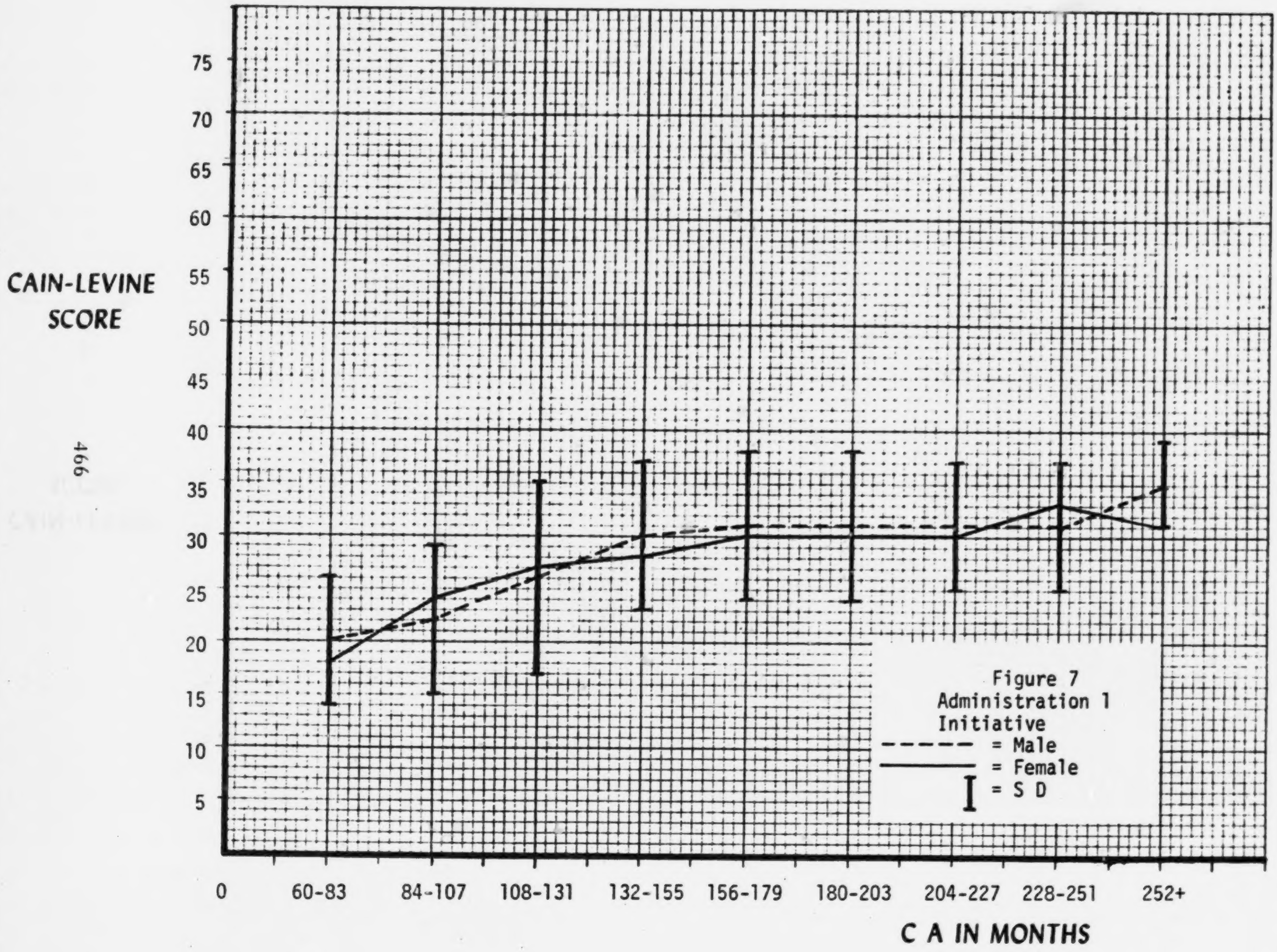

Figure 7
Administration 1
Initiative

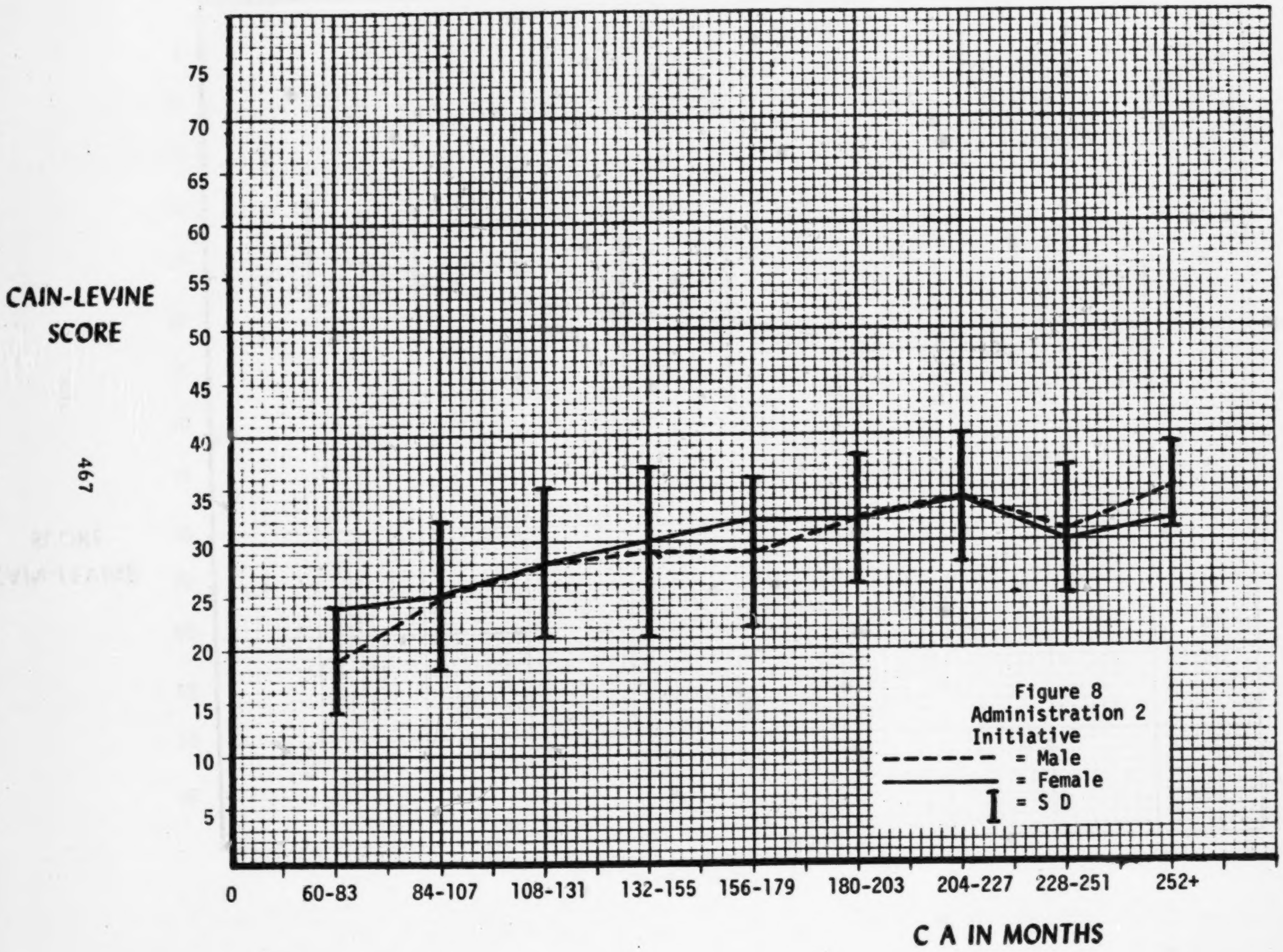

Figure 8
Administration 2
Initiative

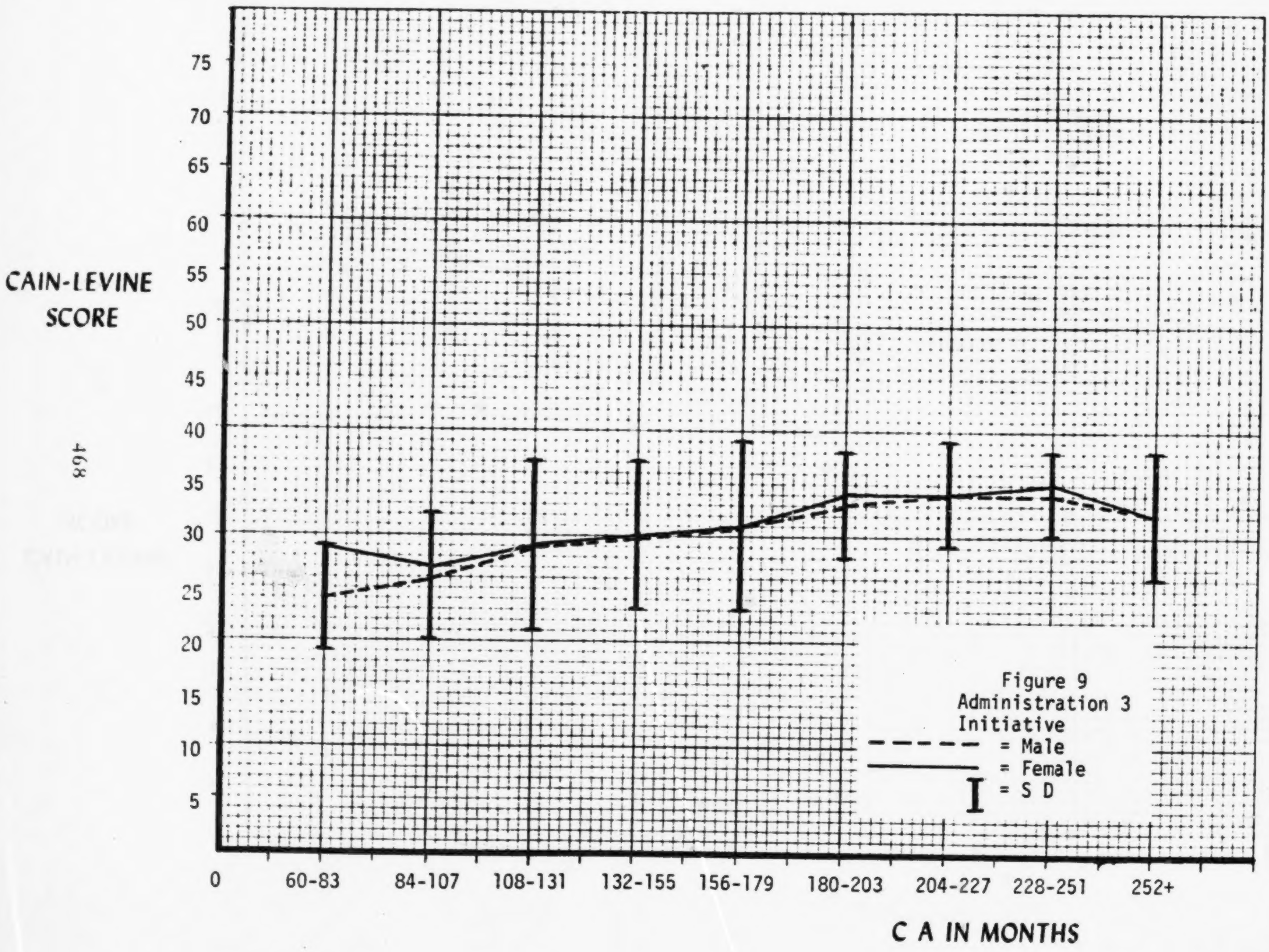

Figure 9
Administration 3
Initiative

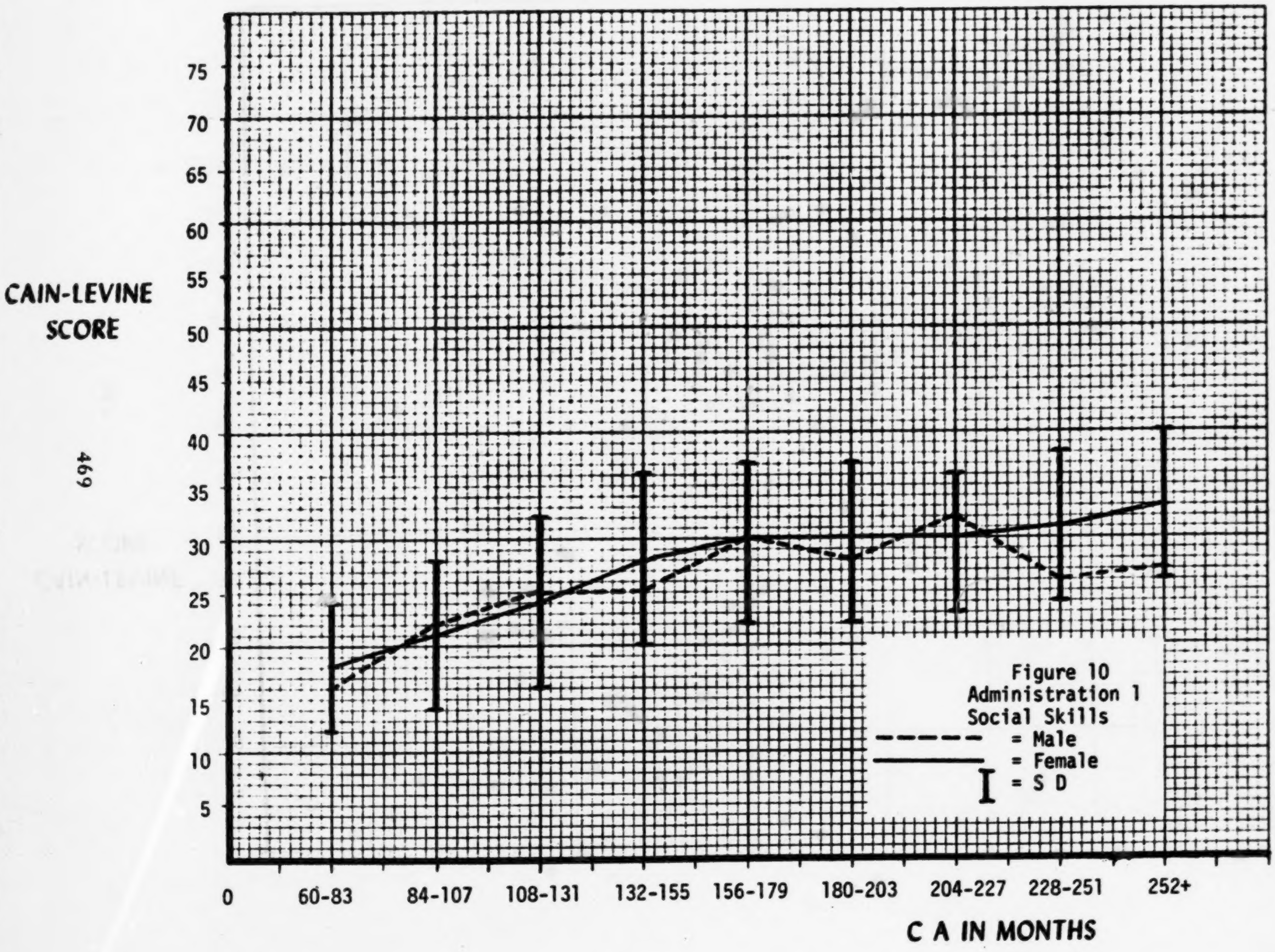
Figure 10
Administration 1
Social Skills

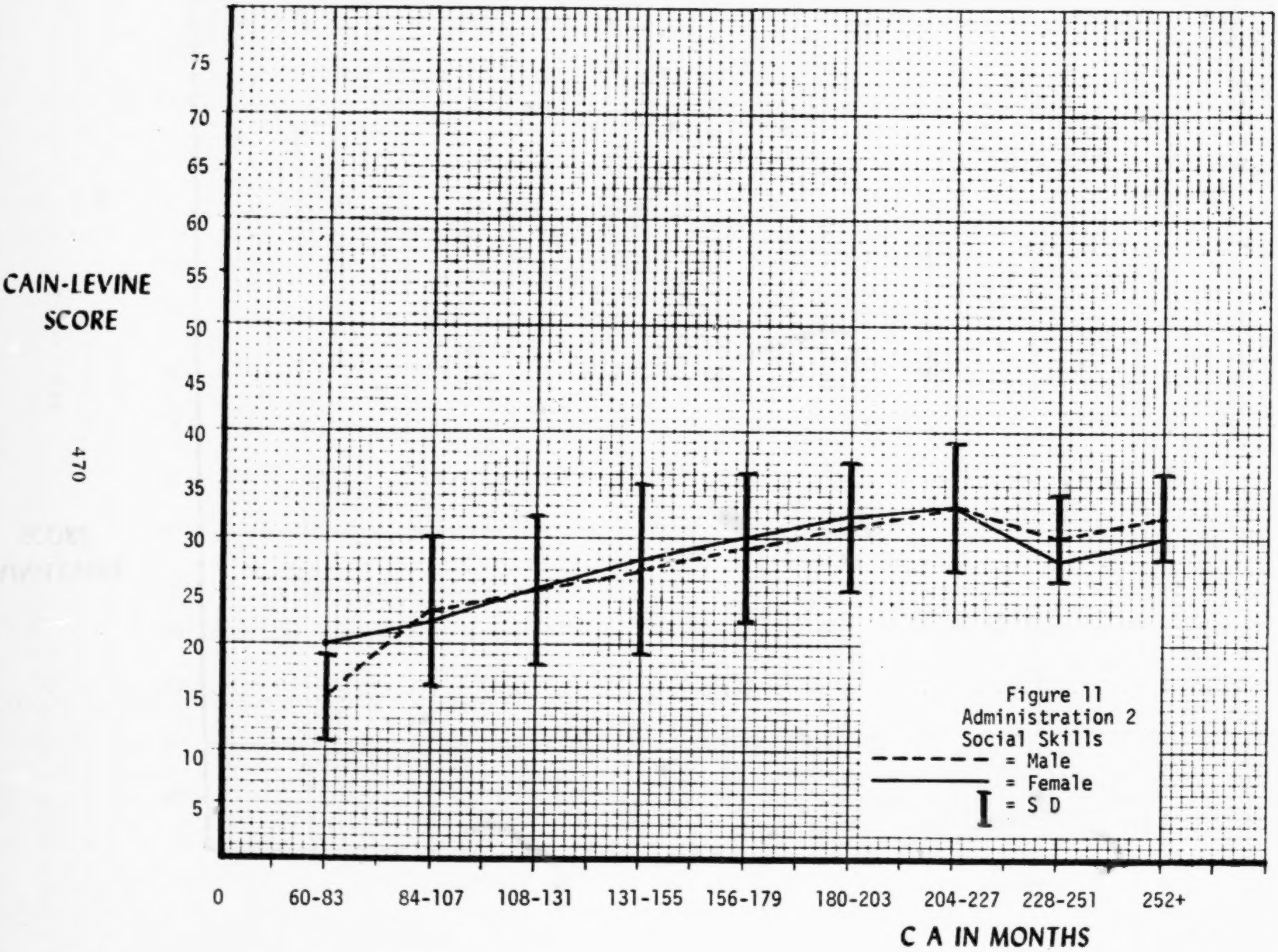

Figure 11
Administration 2
Social Skills

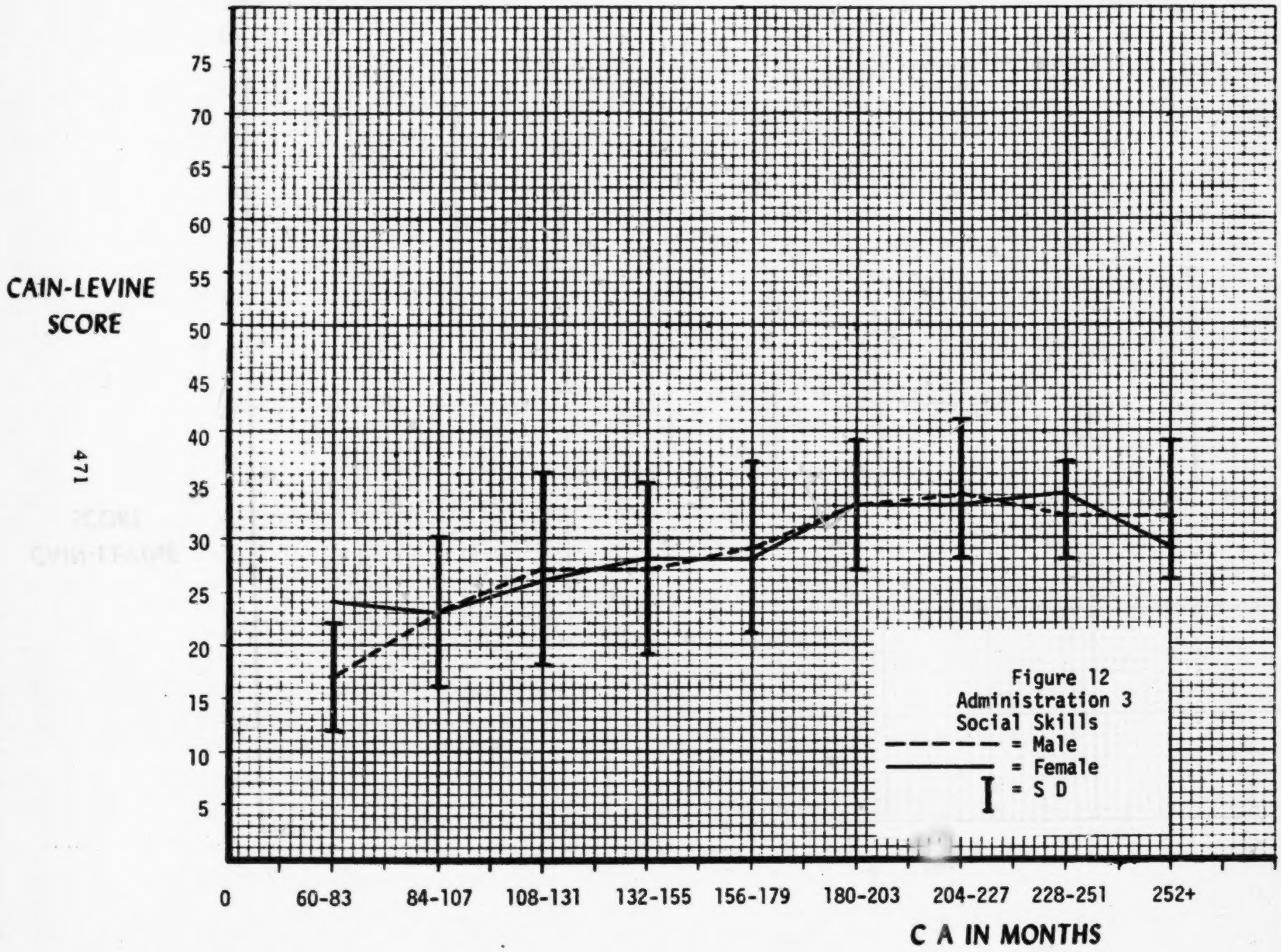

Figure 12
Administration 3
Social Skills

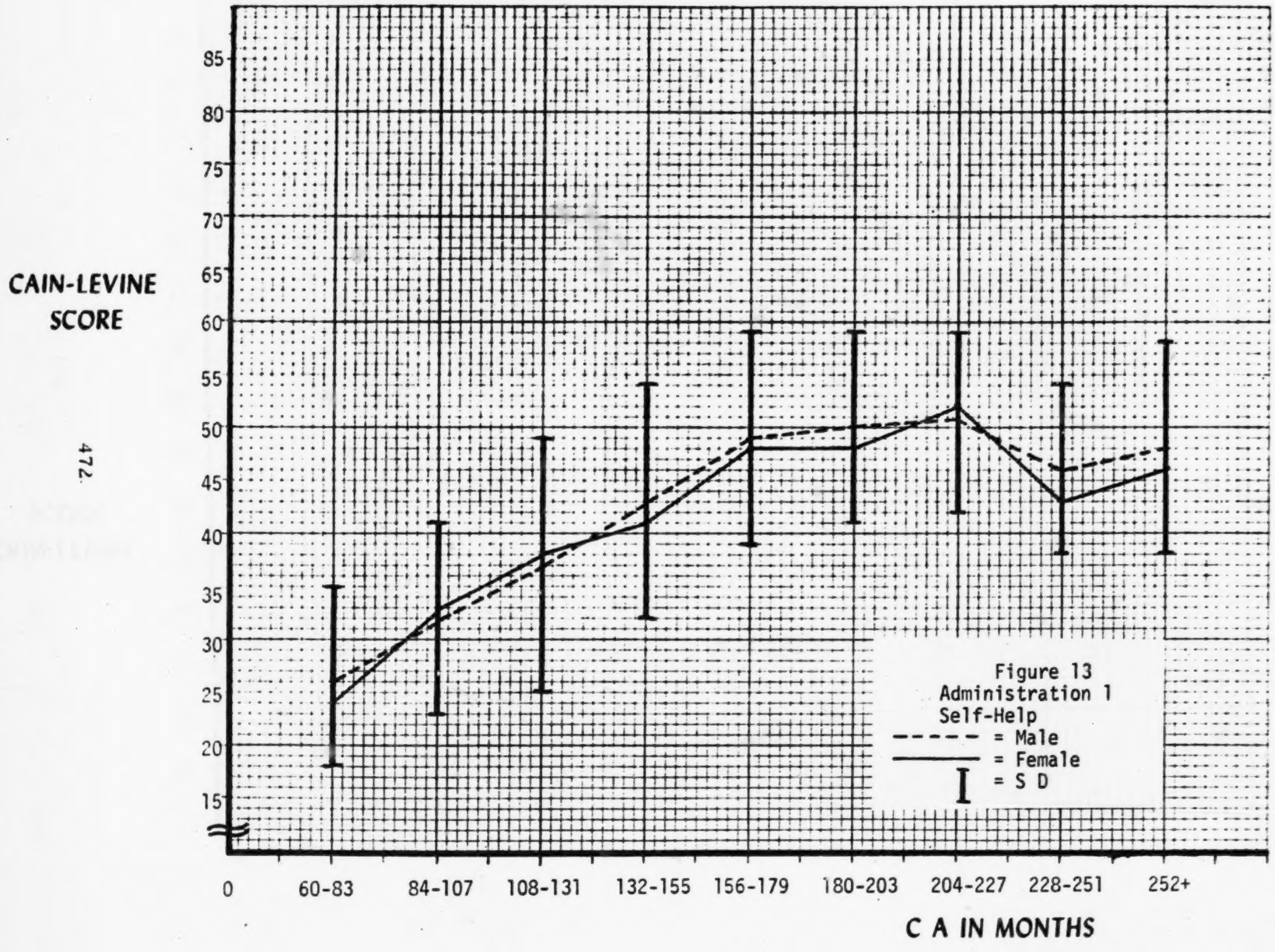

Figure 13
Administration 1
Self-Help

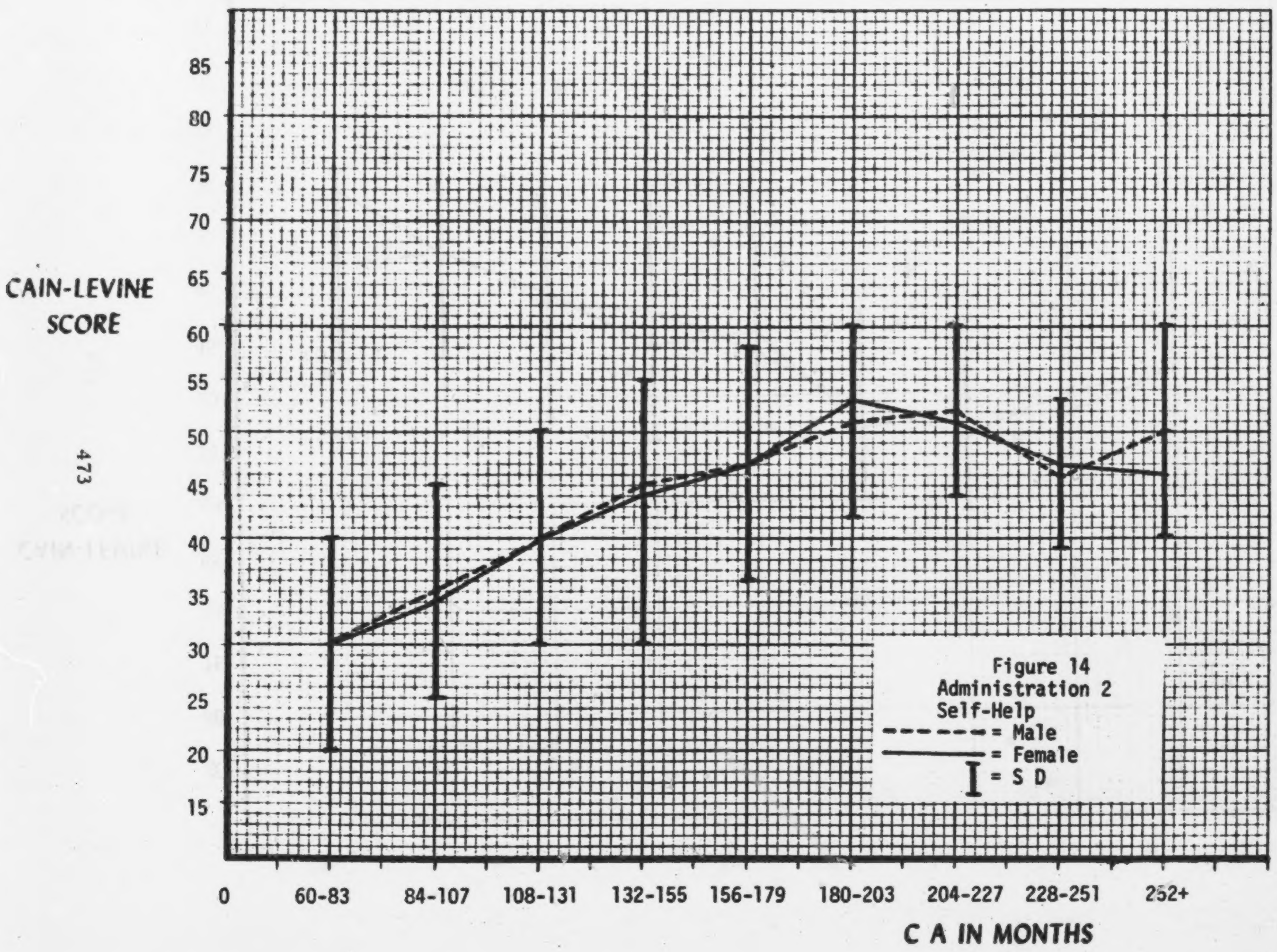

Figure 14
Administration 2
Self-Help

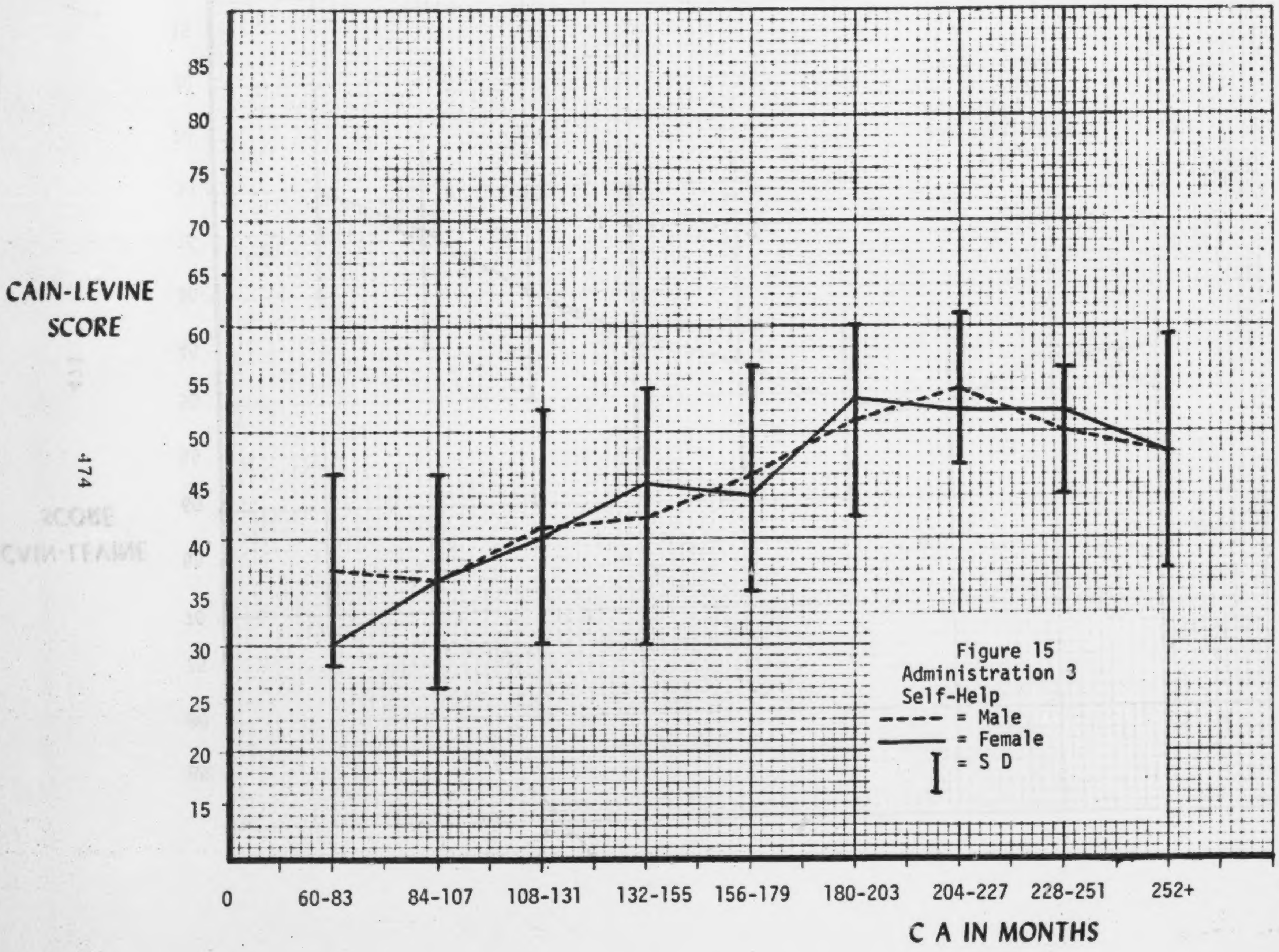

Figure 15
Administration 3
Self-Help

Appendix C: Summary scores: Combined groups. Mean and standard deviation of scores and size of group.

Table 1. Administration 1

Table 2. Administration 2

Table 3. Administration 3

TABLE 1

ADMINISTRATION I: COMBINED GROUPS MEAN AND STANDARD DEVIATION OF SCORES AND SIZE OF GROUP

CA		SH	I	C	S	TOTAL
(in months)	Mean	25.514	19.292	22.556	17.250	84.611
60-93	SD	7.415	6.321	8.012	5.422	23.123
	N	72				
84-107	Mean	32.297	22.963	26.872	21.242	103.374
	SD	9.630	7.253	7.379	6.870	26.969
	N	219				
108-131	Mean	36.976	26.357	28.595	24.367	116.295
	SD	11.633	8.897	7.697	8.122	32.433
	N	210				
132-155	Mean	42.473	29.048	20.509	26.576	128.606
	SD	11.544	7.393	6.884	8.075	30.195
	N	165				
156-179	Mean	48.603	31.078	32.026	29.879	141.586
	SD	10.720	7.008	6.199	7.264	27.771
	N	116				
180-203	Mean	49.311	20.330	31.604	29.132	140.377
	SD	10.314	7.179	7.336	7.389	28.071
	N	106				
204+	Mean	48.740	31.130	31.805	29.623	141.299
	SD	9.578	6.414	6.985	6.998	25.716
	N	77				

TABLE 2

ADMINISTRATION II: COMBINED GROUPS
MEAN AND STANDARD DEVIATION OF
SCORES AND SIZE OF GROUPS

CA (in months)		SH	I	C	SS	TOTAL
60-83	Mean	30.286	21.786	24.143	18.643	94.857
	SD	6.182	5.860	6.893	4.236	18.157
	N	14				
84-107	Mean	34.356	25.125	27.904	22.490	109.875
	SD	9.552	7.040	6.928	6.839	25.854
	N	104				
108-131	Mean	39.605	28.373	29.638	25.096	122.712
	SD	10.052	6.967	6.462	7.026	26.613
	N	177				
132-155	Mean	43.198	29.712	30.339	27.458	130.706
	SD	12.262	7.687	7.517	8.139	32.066
	N	177				
156-179	Mean	46.800	30.139	31.609	28.991	137.539
	SD	11.054	6.617	6.266	7.105	27.503
	N	115				
180-203	Mean	51.633	31.990	32.949	31.602	148.173
	SD	8.832	5.687	5.579	6.270	22.014
	N	98				
204+	Mean	49.477	32.547	32.256	31.442	145.721
	SD	9.666	5.999	6.151	6.540	23.685
	N	86				

TABLE 3

ADMINISTRATION III: COMBINED GROUPS MEAN AND STANDARD DEVIATION OF SCORES AND SIZE OF GROUP

CA (in months)		SH	I	C	SS	TOTAL
60-83	Mean	34.667	25.167	23.333	19.167	102.333
	SD	8.311	6.969	6.377	5.672	22.975
	N	6				
84-107	Mean	36.032	26.516	28.887	23.097	114.532
	SD	9.291	6.287	7.505	5.988	24.625
	N	62				
108-131	Mean	40.228	29.171	29.943	26.544	125.987
	SD	10.809	7.765	6.891	8.111	29.858
	N	159				
132-155	Mean	42.865	30.028	30.028	27.319	130.241
	SD	11.399	7.456	7.247	7.984	30.022
	N	141				
156-179	Mean	45.155	30.543	30.603	28.336	134.638
	SD	11.710	7.268	6.439	7.871	29.897
	N					
180-203	Mean	51.940	33.071	34.321	32.905	152.238
	SD	8.237	5.399	5.668	5.622	20.161
	N	84				
204+	Mean	51.944	33.730	33.404	32.809	151.888
	SD	8.580	5.295	6.164	6.481	21.927
	N	204+				

Appendix D: Graphs of mean score for each CA group on each administration.

Figure 1. Communication

Figure 2. Self Help

Figure 3. Initiative

Figure 4. Social Skills

Figure 5. Total score

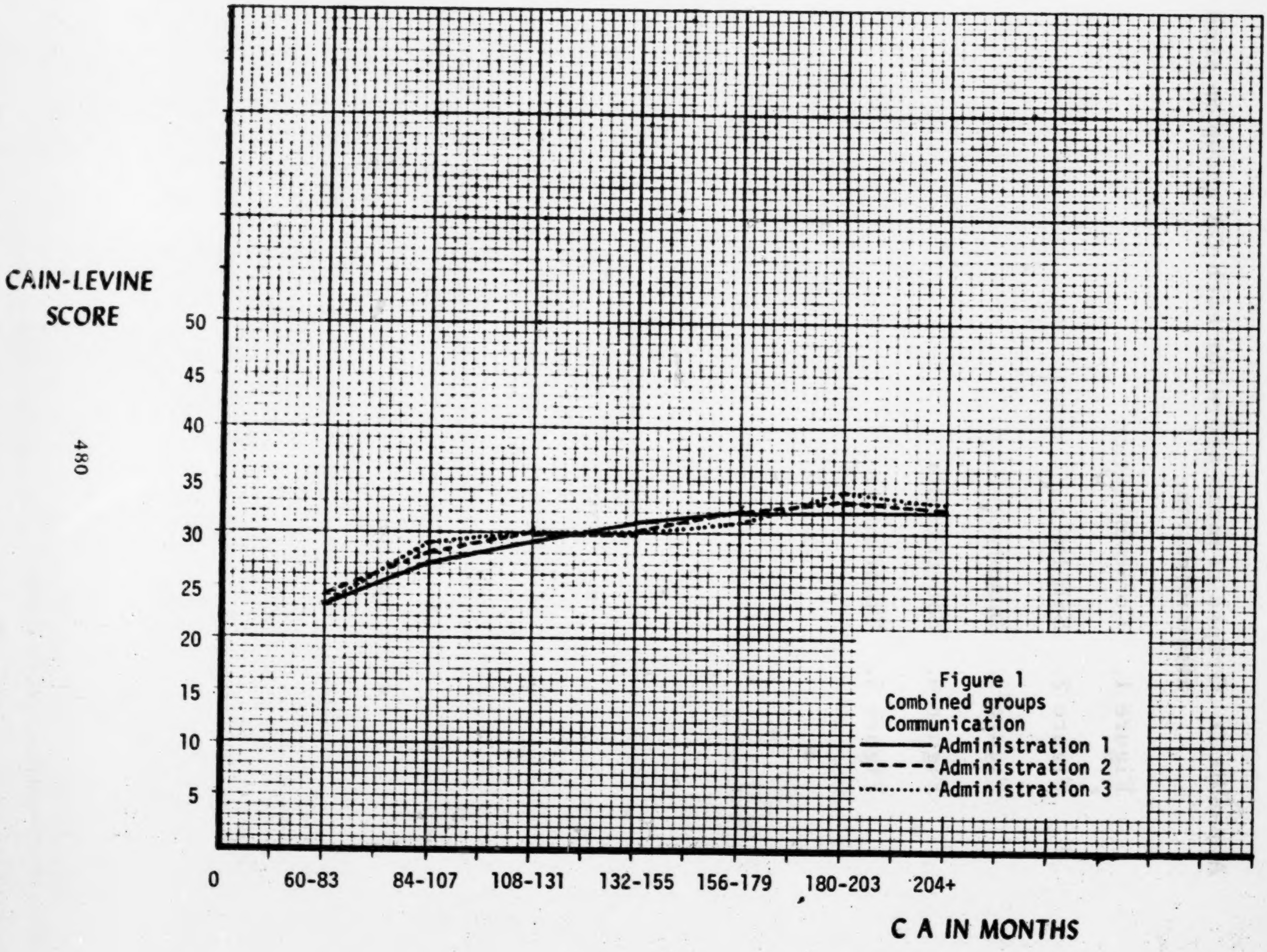

Figure 1
Combined groups
Communication

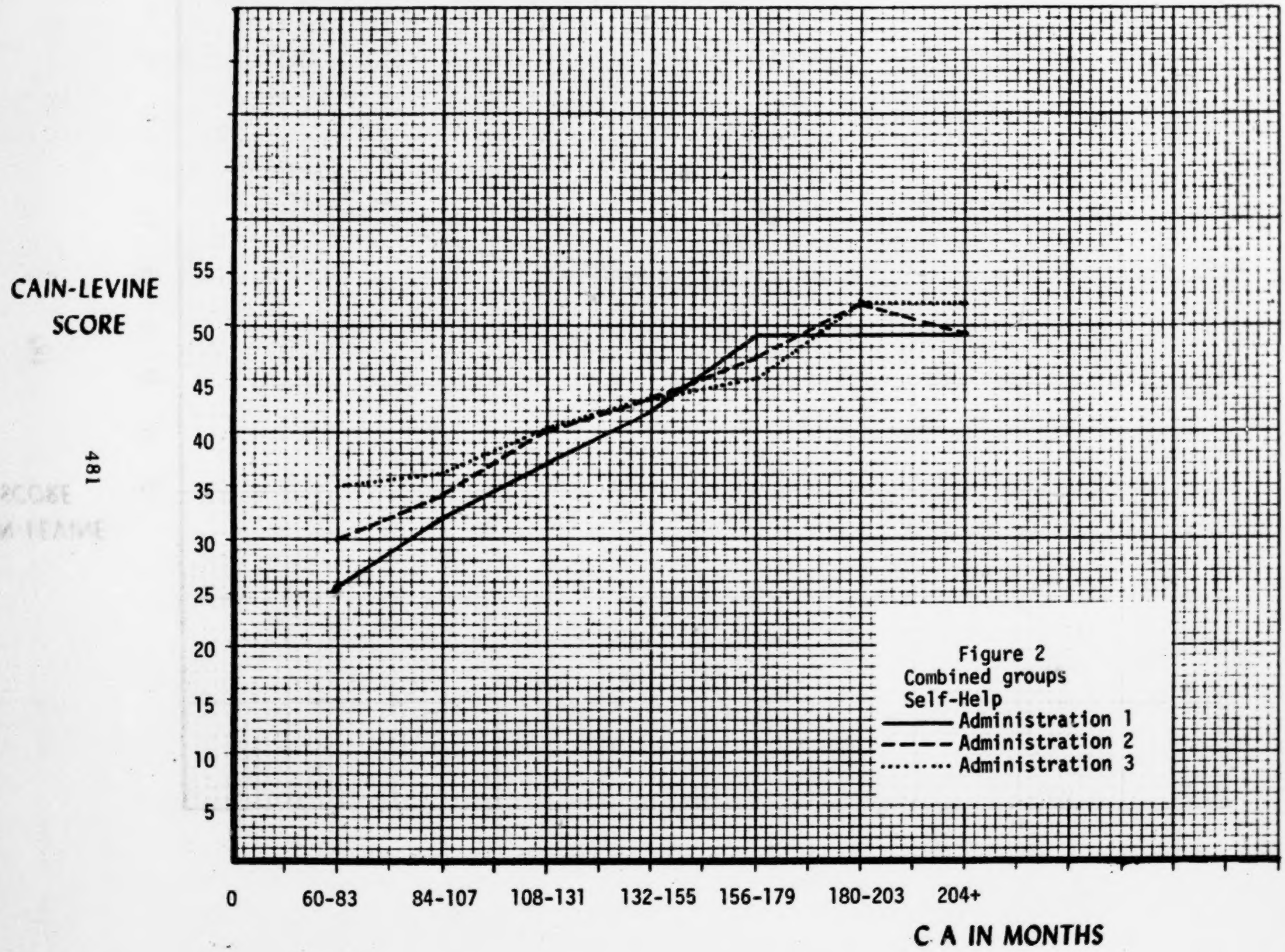

Figure 2
Combined groups
Self-Help

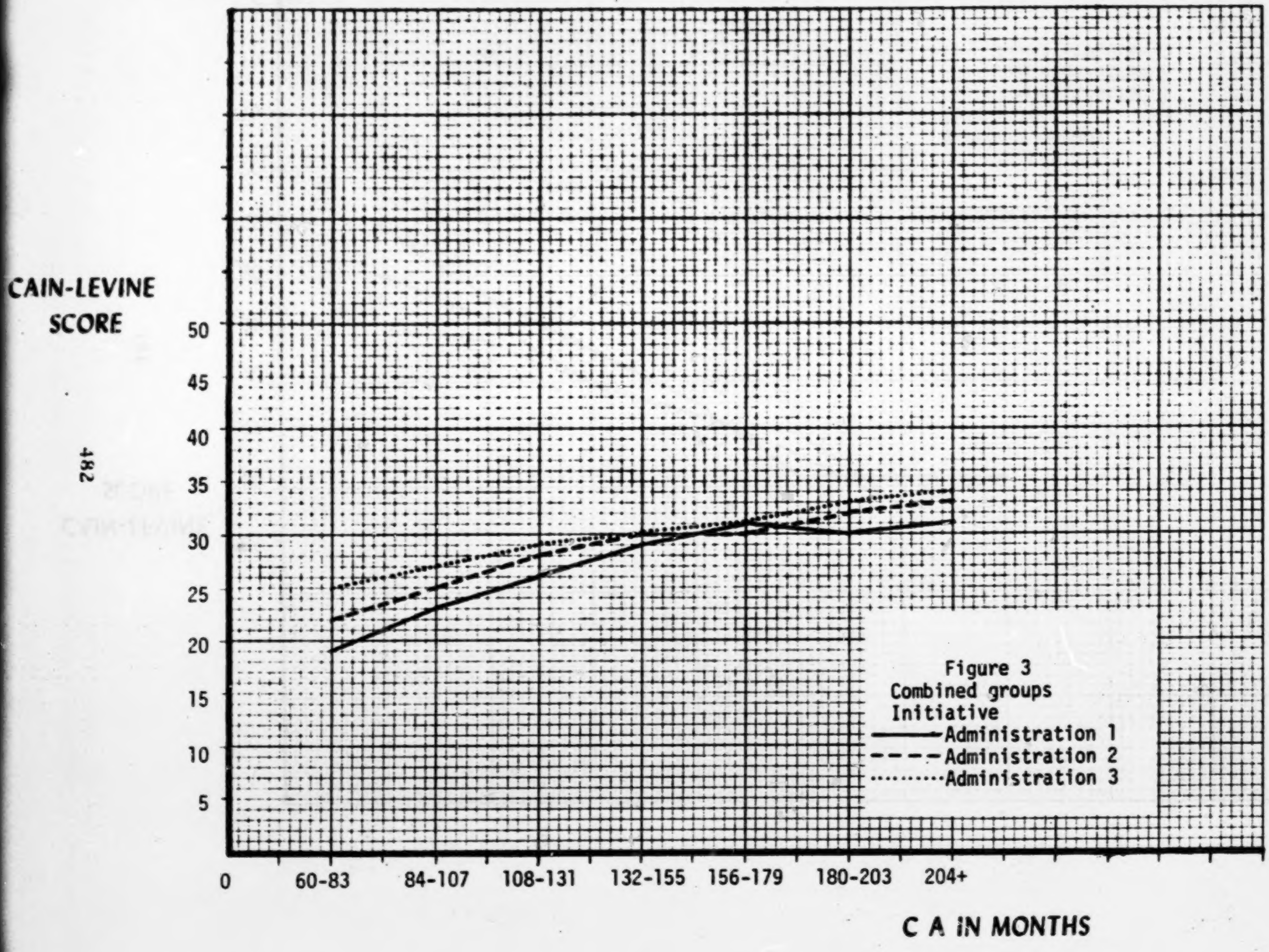

Figure 3
Combined groups
Initiative

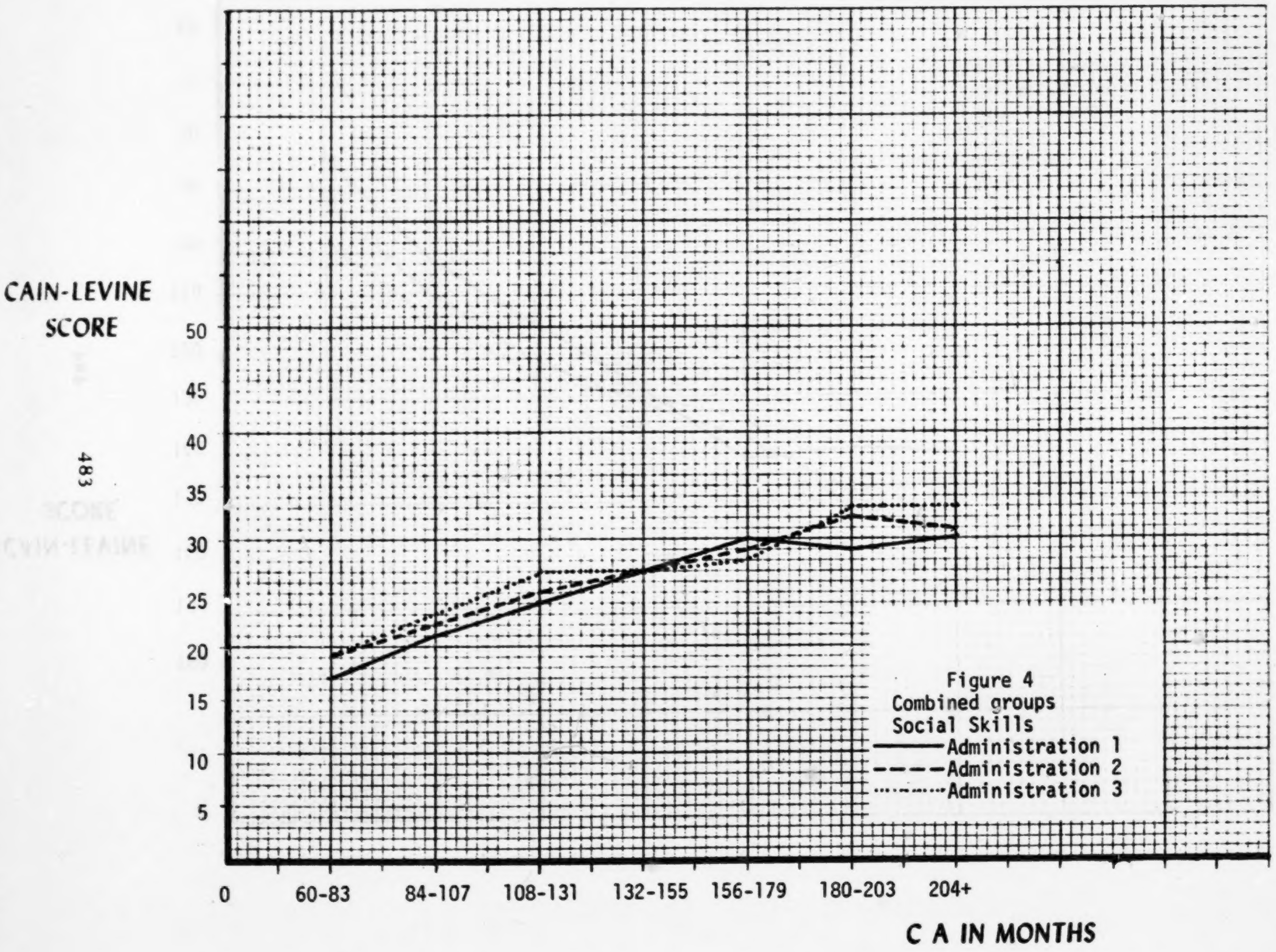

Figure 4
Combined groups
Social Skills

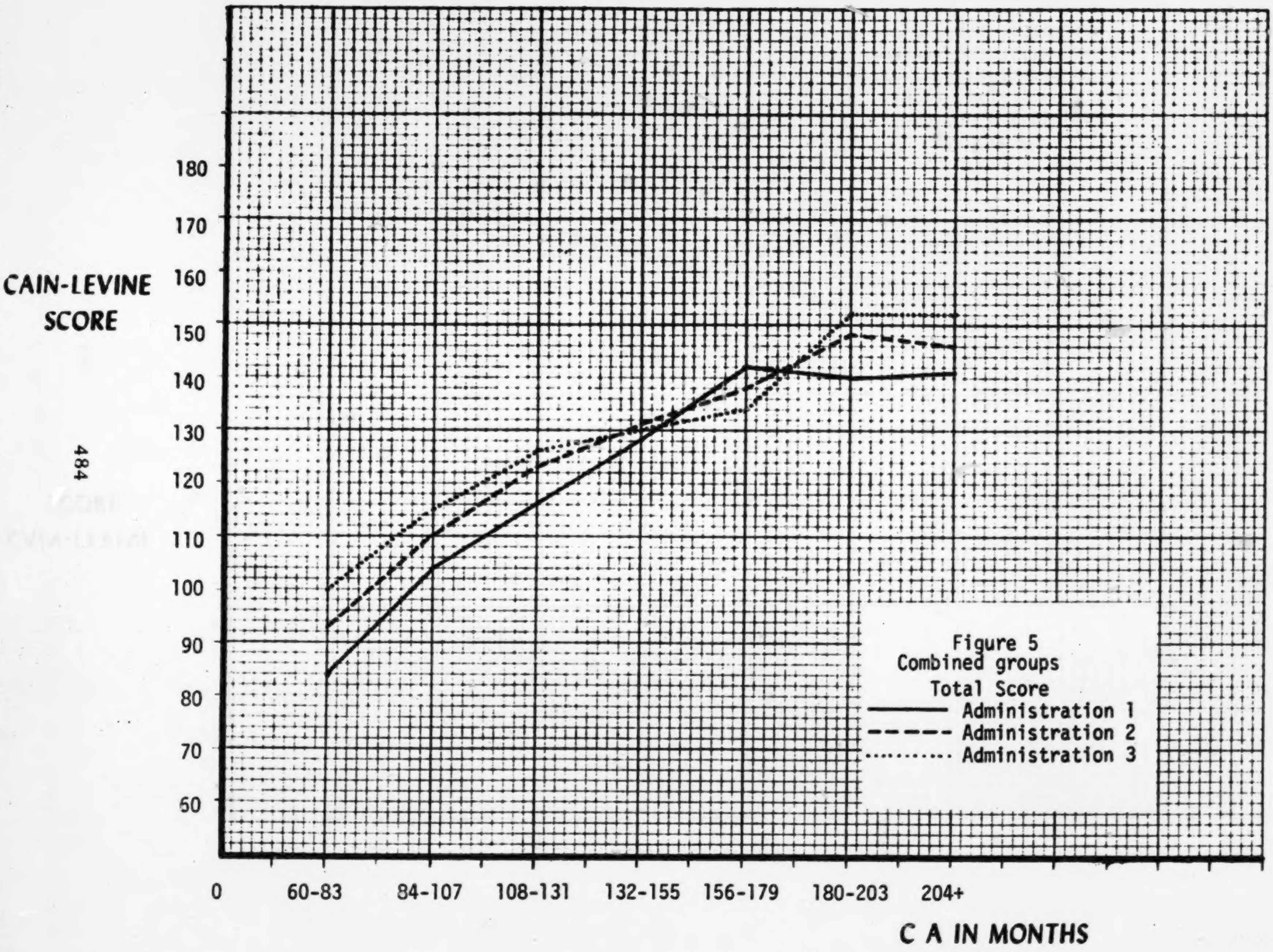
Figure 5
Combined groups
Total Score

Appendix E. Percentile equivalents of Cain-Levine raw scores at first testing.

Table 1.	Subscale scores.	CA 60-83 months
Table 2.	Total score.	CA 60-83 months
Table 3.	Subscale scores.	CA 84-107 months
Table 4.	Total score.	CA 84-107 months
Table 5.	Subscale scores.	CA 108-131 months
Table 6.	Total score.	CA 108-131 months
Table 7.	Subscale scores.	CA 132-155 months
Table 8.	Total score.	CA 132-155 months
Table 9.	Subscale scores.	CA 156-179 months
Table 10.	Total score.	CA 156-179 months
Table 11.	Subscale scores.	CA 180-203 months
Table 12.	Total score.	CA 180-203 months
Table 13.	Subscale scores.	CA 204 months and above
Table 14.	Total score.	CA 204 months and above

TABLE I
ADMINISTRATION I
CA 60-83
N = 72

Raw Subscale Score	SH	I	C	SS
	Percentile			
10		1	1	1
11		6	7	6
12		10	13	12
13		15	16	21
14		19		32
15	1	26	19	43
16	4	38		51
17	8	47	25	58
18	13	51	28	65
19	17	53	31	67
20	22	60	37	71
21	31	67	45	78
22	37	70	51	85
23	42	73	58	87
24	49	78	66	89
25	56	83	71	91
26	60	85		92
27	65		74	94
28	73	88	76	97
29	78	90	77	
30	82	92	79	
31	84	95	81	
32			82	
33	85		83	
34		98	87	
35	88		90	
36			92	
37			97	
38	90			
39	92			
40	94	99	99	
41				99
42	97			
43				
44				
45				

TABLE I CON'T.

ADMINISTRATION I

CA 60-83
N = 72

	Percentile			
Raw Subscale Score	SH	I	C	SS
46				
47				
48				
49				
50				
51	99			
52				
53				
54				
55				
56				
57				
58				
59				
60				

TABLE 2
ADMINISTRATION I
CA 60-83

N = 72

Raw Score	Percentile	Raw Score	Percentile	Raw Score	Percentile
40		89	65	138	
41		90		139	
42		91		140	
43		92		141	
44		93	67	142	
45		94		143	
46		95		144	
47	1	96	69	145	
48		97	70	146	
49	2	98	72	147	
50		99		148	
51		100	73	149	
52	3	101	75	150	
53		102		151	
54		103	78	152	
55		104	80	153	
56	6	105	81	154	
57	10	106		155	
58	14	107	83	156	
59		108	85	157	
60	16	109	87	158	
61	17	110	88	159	
62		111		160	
63	19	112	90	161	
64		113		162	
65		114	91	163	
66	22	115		164	
67		116		165	
68	24	117	92	166	
69	27	118		167	
70	28	119		168	
71	31	120		169	99
72	33	121		170	
73	36	122	94	171	
74	38	123		172	
75	40	124		173	

TABLE 2 CON'T.

ADMINISTRATION I

CA 60-83
N = 72

Raw Score	Percentile	Raw Score	Percentile	Raw Score	Percentile
76		125		174	
77		126		175	
78		127		176	
79	44	128	96	177	
80	47	129		178	
81	50	130		179	
82		131		180	
83	52	132		181	
84	54	133	98	182	
85	56	134		183	
86	58	135		184	
87		136		185	
88	63	137			

TABLE 3
ADMINISTRATION I
CA 84-107
N = 219

Raw Subscale Score	Percentiles SH	I	C	SS
10		1		1
11			1	3
12		3	2	6
13		7	3	10
14	1	10	5	15
15	1	14	7	20
16		16	8	26
17	2	23	11	32
18	4	27	13	38
19	6	32	16	42
20	9	38	21	47
21	12	41	24	53
22	14	51	27	59
23	17	55	31	65
24	21	60	35	69
25	24	65	40	72
26	29	70	44	77
27	33	74	50	81
28	37	76	56	83
29	42	78	60	86
30	46	81	63	88
31	52	84	68	90
32	56	87	74	92
33	59	89	77	
34	62	90	79	93
35	65	92	83	95
36	68	94	87	97
37	71	95	90	98
38	73	96	94	99
39	76	98	96	99
40	78	99	99	99
41	79			
42	81			
43	83			
44	85			
45	88			

TABLE 3 CONT'D

ADMINSTRATION I

CA 84-107
N = 219

Raw Subscales Score	Percentile SH	I	C	SS
46	90			
47	91			
48	92			
49				
50	95			
51	96			
52	97			
53	99			
54	99			
55				
56				
57				
58				
59				
60				

TABLE 4
ADMINISTRATION I
CA 84-107
TOTAL RAW SCORE

Raw Score	Percentile	Raw Score	Percentile	Raw Score	Percentile
40		89	32	138	87
41		90	33	139	88
42		91	34	140	89
43		92	36	141	90
44		93	36	142	91
45		94	39	143	92
46		95	42	144	
47	1	96	43	145	92
48	1	97		146	93
49		98	45	147	93
50		99	46	148	94
51		100	47	149	
52	1	101	50	150	
53	2	102	51	151	94
54	2	103	52	152	95
55		104	53	153	96
56	3	105	54	154	96
57		106	55	155	97
58		107	57	156	
59	4	108	59	157	97
60		109	61	158	
61		110	62	159	97
62	5	111	64	160	98
63	6	112	66	161	
64	6	113	66	162	
65	7	114	67	163	
66	7	115	68	164	
67	8	116	70	165	
68	10	117	72	166	99
69		118		167	
70	11	119	73	168	
71	12	120		169	
72		121		170	
73	13	122	74	171	99
74	15	123	76	172	
75	16	124	78	173	

TABLE 4 CONT'D.

ADMINISTRATION I

CA 84-107

TOTAL RAW SCORE

Raw Score	Percentile	Raw Score	Percentile	Raw Score	Percentile
76	18	125	80	174	
77	19	125		175	
78		127	80	176	
79	20	128	81	177	
80	21	129	81	178	
81	22	130	82	179	
82	22	180	82	180	
83	23	181	83	181	
84	25	182	84	182	
85	26	183	85	183	
86	28	184	86	184	
87		185	87	185	
88	30	186		186	

TABLE 5

ADMINISTRATION I

CA 108 - 131
N = 210

Raw Subscale Score	Percentiles SH	I	C	SS
10		1	1	1
11		2	2	1
12		2		3
13		4	3	6
14	1	8	4	10
15	1	12	5	14
16		17	7	18
17	1	20	9	21
18	2	23	11	25
19	4	27	14	31
20	6	31	17	37
21	8	34	20	41
22	10	37	22	44
23	13	40	24	48
24	15	42	26	51
25	18	46	29	54
26	21	50	34	57
27	25	53	39	62
28	28	57	44	67
29	31	59	50	72
30	34	60	54	75
31	37	64	59	78
32	40	68	63	80
33	42	71	68	82
34	45	75	72	84
35	46	77	75	86
36	49	80	79	89
37	51	83	83	91
38	54	87	87	93
39	55	91	92	95
40	58	96	98	97
41	62	99		98
42	64			
43	66			
44	69			
45	70			

TABLE 5 CONT'D.

ADMINISTRATION I

CA 108-131
N = 210
Percentile

Raw Subscale Score	SH	I	C	SS
46	72			
47	75			
48	77			
49	80			
50	82			
51	85			
52	88			
53	90			
54	92			
55	95			
56	96			
57	97			
58	98			
59	99			
60	99			

TABLE 6

ADMINISTRATION I

CA 108-131
N = 210
TOTAL RAW SCORE

Raw Score	Percentile	Raw Score	Percentile	Raw Score	Percentile
40		89	24	138	71
41		90		139	72
42		91	25	140	72
43		92	26	141	74
44	1	93	27	142	76
45		94	28	143	77
46	1	95	30	144	78
47		96		145	78
48		97	33	146	79
49		98	35	147	80
50		99	36	148	
51		100	37	149	81
52		101	38	150	82
53		102	39	151	
54	1	103	39	152	
55		104	40	153	83
56		105	41	154	84
57		106	42	155	84
58		107	42	156	86
59		108		157	87
60	2	109		158	88
61		110	43	159	89
62	3	111	45	160	89
63	4	112	46	161	90
64		113	48	162	91
65	5	114	49	163	92
66		115	50	164	92
67		116	51	165	93
68		117	51	166	
69	5	118	52	167	94
70	6	119	53	168	95
71	7	120	54	169	95
72	8	121	55	170	
73	9	122	57	171	96
74	10	123	58	172	
75	11	124	59	173	97

TABLE 6 CONT'D.

ADMINISTRATION I

CA 108-131
N = 210
TOTAL RAW SCORE

Raw Score	Percentile	Raw Score	Percentile	Raw Score	Percentile
76	12	125	60	174	97
77	13	126	60	175	98
78	14	127	61	176	
79		128	62	177	98
80	15	129	62	178	
81	15	130	63	179	
82	16	180	64	180	99
83	17	181	65	181	99
84	19	182	66	182	99
85	20	183	67	183	
86	21	184	68	184	
87	21	185	68	185	
88	23	186	70	186	

TABLE 7
ADMINISTRATION I

CA 132 - 155
N = 165

Raw Subscale Score	Percentile SH	I	C	SS
10		1		1
11				1
12		1		2
13			1	3
14		2	2	5
15	1	4	2	9
16	1	5	4	12
17		7	5	15
18	2	10	6	18
19		12	7	22
20	4	14	10	26
21	6	18	11	30
22	8	22	13	33
23	10	24	15	35
24	11	26	18	39
25	12	30	21	43
26		33	25	46
27	12	36	29	48
28	13	39	34	53
29	14	42	38	57
30	16	47	42	62
31	18	52	48	66
32	20	58	55	71
33	21	67	60	76
34	23	72	64	80
35	25	76	69	85
36	28	81	74	88
37	32	86	79	90
38	35	90	84	92
39	37	92	90	94
40	39	97	96	94
41				96
42	42			99
43	45			
44	48			
45	51			

TABLE 7 CONT'D

ADMINISTRATION I

CA 132-155
N = 165

Percentile

Raw Subscale Score	SH	I	C	SS
46	55			
47	58			
48	61			
49	63			
50	66			
51	70			
52	75			
53	79			
54	83			
55	86			
56	90			
57	93			
58	96			
59	99			
60	99			

TABLE 8
ADMINISTRATION I
CA 132-155
N = 165
TOTAL RAW SCORE

Raw Score	Percentile	Raw Score	Percentile	Raw Score	Percentile
40		89		138	54
41		90		139	55
42		91	13	140	
43		92		141	57
44		93	14	142	58
45		94	15	143	60
46		95	17	144	61
47		96		145	62
48		97	18	146	63
49		98	20	147	67
50		99		148	70
51		100		149	72
52	1	101	22	150	72
53		102	22	151	74
54		103		152	76
55		104	23	153	79
56	1	105	24	154	
57		106	25	155	81
58		107	27	156	82
59		108		157	83
60		109	28	158	84
61		110	29	159	85
62		111		160	85
63	2	112	30	161	
64		113	32	162	86
65	2	114	33	163	87
66	3	115	34	164	88
67		116	34	165	89
68		117	35	166	90
69		118	37	167	91
70		119	38	168	
71		120		169	92
72	4	121	39	170	92
73		122		171	93
74		123	40	172	95
75		124	41	173	97

TABLE 8 CONT'D.

ADMINISTRATION I

CA 132-155
N = 165
TOTAL RAW SCORE

Raw Score	Percentile	Raw Score	Percentile	Raw Score	Percentile
76		125	42	174	
77		126	42	175	
78		127	43	176	
79	5	128	44	177	98
80	6	129		178	99
81	8	130	45	179	99
82		131	45	180	
83	8	132	47	181	
84	9	133		182	
85		134	49	183	
86	10	135	50	184	
87	11	136	52	185	
88	12	137	53	186	

TABLE 9
ADMINISTRATION I
CA 156 - 179
N = 116

Raw Subscales Score	Percentile			
	SH	I	C	SS
10		1	1	1
11				1
12				2
13				
14			2	
15		3		3
16	1	4		
17		6	3	5
18		7		7
19	1			8
20		8	4	10
21	2	9	5	12
22	3	10	6	14
23	5	13		19
24	6	16	8	22
25		18	10	25
26		22	13	29
27		25	17	34
28	8	29	19	38
29	9	31	25	42
30		36	34	47
31		44	44	51
32		51	51	57
33		56	54	63
34	10	62	56	67
35		67	63	72
36	11	71	71	78
37	13	76	75	82
38	13	81	81	87
39	14	88	87	91
40	16	96	95	94
41	20			96
42	23			98
43	25			
44	26			
45	29			

TABLE 9 CONT'D.

ADMINISTRATION I

CA 156-179
N = 116

Percentile

Raw Subscale Score	SH	I	C	SS
46	32			
47	34			
48	37			
49	41			
50	43			
51	45			
52	49			
53	55			
54	61			
55	68			
56	72			
57	78			
58	84			
59	87			
60	94			

TABLE 10
ADMINISTRATION I
CA 156-179
N = 116
TOTAL RAW SCORE

Raw Score	Percentile	Raw Score	Percentile	Raw Score	Percentile
40		89		138	
41		90		139	37
42		91		140	38
43		92	6	141	39
44		93		142	41
45		94		143	42
46		95		144	43
47	1	96		145	46
48		97		146	48
49	1	98	7	147	51
50		99		148	54
51		100		149	56
52		101	9	150	57
53		102	10	151	59
54		103		152	61
55		104		153	63
56		105		154	
57		106		155	64
58		107	11	156	
59		108	12	157	65
60		109		158	66
61		110		159	67
62		111	13	160	68
63		112	13	161	
64		113	14	162	69
65		114		163	72
66		115		164	
67		116		165	77
68		117	16	166	81
69		118	17	167	84
70		119	18	168	87
71		120		169	
72		121	19	170	88
73		122		171	90
74		123	20	172	
75	2	124	22	173	93

TABLE 10 CONT'D.

ADMINISTRATION I

CA 156-179
N = 116
TOTAL RAW SCORE

Raw Score	Percentile	Raw Score	Percentile	Raw Score	Percentile
76	3	125	23	174	95
77		126	25	175	96
78		127		176	97
79	5	128	27	177	
80		129	29	178	
81		130	30	179	
82		131		180	98
83		132	31	181	99
84		133	32	182	99
85		134	33	183	
86		135	34	184	
87		136		185	
88	6	137		186	

TABLE 11
ADMINISTRATION I
CA 180 - 203
N = 106

Raw Subscales Score	Percentile			
	SH	I	C	SS
10				
11				1
12				
13		1	1	1
14			2	
15	1	2		3
16		4		4
17		5	4	6
18		6	6	8
19		8	8	11
20		10	9	13
21		12	12	15
22	2	15	14	19
23		17	15	23
24		19	17	25
25	4	23		30
26	5	27	20	35
27		32	24	39
28	6	36	27	42
29		42	32	47
30	7	48	38	50
31		53	42	56
32	8	57	46	62
33	9	60	49	68
34		63	54	72
35	10	66	58	76
36	12	70	63	80
37	14	75	70	83
38	15	81	76	87
39	17	88	82	90
40		96	93	94
41	20			
42				98
43	22			
44	24			
45	26			

TABLE 11 CONT'D.

ADMINISTRATION I

CA 180-2-3
N = 106

	Percentile			
Raw Subscale Score	SH	I	C	SS
46	27			
47	28			
48	32			
49	37			
50	41			
51	45			
52	50			
53	55			
54	61			
55	65			
56	69			
57	75			
58	78			
59	81			
60	92			

TABLE 12
ADMINISTRATION I
CA 180-203
N = 106
TOTAL RAW SCORE

Raw Score	Percentile	Raw Score	Percentile	Raw Score	Percentile
40		89	5	138	44
41		90		139	46
42		91		140	
43		92		141	48
44		93	7	142	
45		94		143	50
46		95		144	52
47		96	9	145	53
48		97		146	
49		98	11	147	
50		99	12	148	56
51		100	13	149	58
52		101	14	150	
53		102		151	59
54		103		152	60
55		104	15	153	61
56		105		154	62
57		106		155	63
58		107		156	64
59		108		157	67
60		109		158	69
61		110	16	159	70
62	1	111	17	160	
63		112	17	161	
64		113		162	72
65		114	18	163	73
66		115	19	164	75
67		116	20	165	77
68		117		166	78
69		118		167	86
70		119		168	81
71		120		169	83
72		121	22	170	84
73		122	23	171	85
74		123		172	87
75		124	24	173	89

TABLE 12 CONT'D.

ADMINISTRATION I

CA 180-203
N = 106
TOTAL RAW SCORE

Raw Score	Percentile	Raw Score	Percentile	Raw Score	Percentile
76	1	125	25	174	90
77		126	27	175	91
78		127	29	176	92
79		128	31	177	
80	2	129	32	178	94
81		130	33	179	96
82		131		180	97
83		132		181	99
84	3	133	34	182	99
85		134	36	183	
86		135	37	184	
87		136	39	185	
88		137	42	186	

TABLE 13
ADMINISTRATION I

CA 204 +
N = 77

Raw Subscales Score	Percentile SH	I	C	SS
10				
11			1	
12		1	2	1
13				
14			3	2
15		2		
16				3
17		4		
18		6	5	5
19				9
20		7	7	14
21	1	8	8	
22		10		
23			10	16
24		14	14	18
25		18		23
26	2	20	18	31
27	3		23	38
28		23	27	42
29	5	27	31	44
30		35	34	47
31	6	44	38	50
32	7	50	42	56
33	9	57	46	64
34		63	51	72
35	12	69	57	79
36	14	78	65	82
37			73	84
38	15	85	81	86
39	17	90	89	90
40		97	97	95
41				98
42	20			99
43	23			
44	26			
45	31			

TABLE 13 CONT'D.

ADMINISTRATION 1

CA 204 +
N = 77

Raw Subscales Score	Percentile			
	SH	I	C	SS
46	36			
47	38			
48	42			
49	44			
50				
51	49			
52	53			
53	56			
54	64			
55	69			
56	72			
57	76			
58	82			
59	88			
60	96			

TABLE 14
ADMINISTRATION I
CA 204+
N = 77
TOTAL RAW SCORE

Raw Score	Percentile	Raw Score	Percentile	Raw Score	Percentile
40	—	89	3	138	44
41	—	90	—	139	—
42	—	91	—	140	45
43	—	92	—	141	47
44	—	93	—	142	—
45	—	94	5	143	—
46	—	95	6	144	49
47	—	96	—	145	—
48	—	97	—	146	—
49	—	98	8	147	—
50	—	99	—	148	51
51	—	100	—	149	—
52	—	101	—	150	53
53	—	102	—	151	—
54	—	103	—	152	55
55	—	104	—	153	58
56	—	105	11	154	60
57	—	106	14	155	62
58	—	107	—	156	66
59	—	108	—	157	—
60	—	109	—	158	69
61	—	110	16	159	72
62	—	111	—	160	—
63	—	112	—	161	—
64	—	113	—	162	74
65	1	114	—	163	78
66	—	115	18	164	83
67	—	116	—	165	86
68	—	117	—	166	—
69	—	118	—	167	—
70	—	119	—	168	—
71	—	120	—	169	—
72	—	121	19	170	88
73	—	122	—	171	—
74	—	123	—	172	90
75	—	124	—	173	—

TABLE 14 CONT'D.

ADMINISTRATION I

CA 204 +
N = 77
TOTAL RAW SCORE

Raw Score	Percentile	Raw Score	Percentile	Raw Score	Percentile
76		125	20	174	92
77		126	21	175	94
78		127		176	96
79	2	128	23	177	98
80		129	25	178	
81		130	28	179	
82		131		180	
83		132	31	181	99
84		133	34	182	
85		134		183	
86		135	36	184	
87		136	40	185	
88		137	42	186	

Appendix F. Percentile equivalents of Cain-Levine raw scores at second testing.

Table 1.	Subscale scores.	CA 60-83 months
Table 2.	Total score.	CA 60-83 months
Table 3.	Subscale scores.	CA 84-107 months
Table 4.	Total score.	CA 84-107 months
Table 5.	Subscale scores.	CA 108-131 months
Table 6.	Total score.	CA 108-131 months
Table 7.	Subscale scores.	CA 132-155 months
Table 8.	Total score.	CA 132-155 months
Table 9.	Subscale scores.	CA 156-179 months
Table 10.	Total score.	CA 156-179 months
Table 11.	Subscale scores.	CA 180-203 months
Table 12.	Total score.	CA 180-203 months
Table 13.	Subscale scores.	CA 204 months and above
Table 14.	Total score.	CA 204 months and above

TABLE I
ADMINISTRATION II
CA 60 - 83
N = 14

Raw Subscales Score	Percentile			
	SH	I	C	SS
10				
11		4		4
12				
13				11
14				18
15				25
16			7	
17		11	21	
18		18		36
19	4	25		50
20		36	36	64
21		46		75
22		61	46	
23	14			
24				86
25			54	96
26				
27			61	
28	25		68	
29	39	79	75	
30	54		82	
31	61			
32	68			
33		89		
34		96	89	
35	75			
36				
37	86		96	
38				
39				
40				
41				
42	96			
43				
44				
45				

TABLE I CONT'D.

ADMINISTRATION II

CA 60 - 83
N = 14

Percentile

Raw Subscales Score	SH	I	C	SS
46				
47				
48				
49				
50				
51				
52				
53				
54				
55				
56				
57				
58				
59				
60				

TABLE 2
ADMINISTRATION II
CA 60-83
N = 14
TOTAL RAW SCORE

Raw Score	Percentile	Raw Score	Percentile	Raw Score	Percentile
40		89		138	
41		90		139	
42		91		140	
43		92		141	
44		93		142	
45		94		143	
46		95	39	144	
47		96	46	145	
48		97	57	146	
49		98		147	
50		99		148	
51		100		149	
52		101		150	
53		102		151	
54		103		152	
55		104		153	
56		105		154	
57	4	106		155	
58		107		156	
59		108	68	157	
60		109		158	
61		110		159	
62		111	75	160	
63		112		161	
64		113	82	162	
65		114	89	163	
66		115		164	
67		116		165	
68		117		166	
69		118		167	
70		119		168	
71		120		169	
72		121		170	
73		122	96	171	
74		123		172	
75	11	124		173	

TABLE 2 CONT'D.

ADMININSTRATION II

CA 60-83
N = 14
TOTAL RAW SCORE

Raw Score	Percentile	Raw Score	Percentile	Raw Score	Percentile
76		125		174	
77		126		175	
78		127		176	
79		128		177	
80	21	129		178	
81		130		179	
82		131		180	
83	32	132		181	
84		133		182	
85		134		183	
86		135		184	
87		136		185	
88		137		186	

TABLE 3
ADMINISTRATION II

CA 84 - 107
N = 104

Raw Subscales Score	Percentile SH	I	C	SS
10			1	
11		1		1
12		1	1	
13		3		5
14		6	3	10
15		8	4	13
16	1	10	5	18
17		12	6	23
18	2	16	9	29
19	3	21	12	36
20	4	27	14	42
21	6	33	18	48
22	9	37	23	53
23	11	39	26	56
24	14	43	29	60
25	18	49	33	66
26	21	55	36	71
27	23	61	40	75
28	28	67	49	80
29	35	71	55	85
30	40	76	59	86
31	45	80	65	87
32	40	83	70	90
33	52	85	75	
34	53	86	77	93
35		89	81	94
36	55	92	86	95
37	59	93	90	96
38	63	96	94	97
39	67	98	98	99
40	71	99	99	99
41	74			
42	75			
43				
44	78			
45	82			

TABLE 3 CONT'D.

ADMINISTRATION II

CA 84-107
N = 104

Percentile

Raw Subscales Score	SH	I	C	SS
46				
47				
48				
49				
50				
51				
52	96			
53	97			
54				
55	98			
56				
57	99			
58				
59				
60				

TABLE 4
ADMINISTRATION II
CA 84-107
N = 104
TOTAL RAW SCORE

Raw Score	Percentile	Raw Score	Percentile	Raw Score	Percentile
40		89	22	138	86
41		90	24	139	
42		91	26	140	87
43		92	27	141	
44		93	29	142	88
45		94	30	143	
46		95	31	144	89
47		96	32	145	
48		97	33	146	
49		98	34	147	91
50		99	36	148	
51		100	38	149	92
52		101		150	
53		102	40	151	93
54		103	42	152	94
55		104	43	153	
56		105	45	154	
57		106	46	155	95
58	1	107	47	156	
59		108	48	157	
60		109	50	158	
61	1	110		159	
62		111	52	160	
63	3	112	54	161	97
64	4	113	57	162	98
65		114		163	
66		115	58	164	
67		116		165	99
68	6	117	59	166	
69		118	62	167	
70		119	64	168	
71		120	66	169	
72		121	67	170	
73		122	68	171	99
74	7	123	69	172	
75	8	124	70	173	

TABLE 4 CONT'D.

ADMINISTRATION II

CA 84-107
N = 104
TOTAL RAW SCORE

Raw Score	Percentile	Raw Score	Percentile	Raw Score	Percentile
76	10	125	72	174	
77		126		175	
78	11	127	73	176	
79	12	128		177	
80		129	75	178	
81		130	77	179	
82	14	131	78	180	
83	16	132	79	181	
84	17	133	81	182	
85	18	134	83	183	
86	19	135		184	
87	20	136	84	185	
88		137	85	186	

TABLE 5
ADMINISTRATION II
CA 108 - 131
N = 177

Raw Subscales Score	Percentile SH	I	C	SS
10		1	1	
11		1	1	1
12		2	1	2
13		3		4
14		4		5
15	1	5	2	9
16		6	3	12
17		7	4	15
18		8	5	18
19	1	10	7	23
20		13	9	25
21	2	17	10	29
22		20	12	34
23	3	22	15	39
24	4	26	19	44
25	5	31	23	49
26	8	35	26	55
27	10	38	30	62
28	14	44	36	66
29	17	50	42	69
30	19	55	50	75
31	22	61	56	79
32	24	67	62	82
33	27	71	69	85
34	32	75	74	87
35	36	80	78	89
36	40	84	81	93
37	44	90	86	96
38	47	94	90	
39	50	97	93	98
40	53	99	98	99
41	57			99
42	59			
43	61			
44	64			
45	66			

TABLE 5 CONT'D.

ADMINISTRATION II

CA 108 - 131
N = 177

Percentile

Raw Subscales Score	SH	I	C	SS
46	70			
47	73			
48	77			
49	80			
50	83			
51	85			
52	86			
53	88			
54	91			
55	93			
56	95			
57	96			
58	97			
59	99			
60	99			

TABLE 6
ADMINISTRATION II
CA 108-131
N = 177
TOTAL RAW SCORE

Raw Score	Percentile	Raw Score	Percentile	Raw Score	Percentile
40		89	11	138	68
41		90		139	69
42		91		140	71
43		92		141	73
44		93	12	142	
45		94	14	143	75
46		95	16	144	76
47		96		145	78
48		97		146	80
49		98	17	147	
50	1	99	17	148	81
51		100	18	149	82
52		101	20	150	83
53	1	102	22	151	84
54		103	25	152	85
55		104	27	153	86
56		105	28	154	87
57		106		155	88
58		107	29	156	
59	1	108	30	157	89
60		109	31	158	91
61		110	33	159	92
62		111	35	160	93
63		112	37	161	94
64		113	39	162	95
65	2	114	40	163	
66		115	41	164	
67		116	42	165	96
68		117	42	166	97
69	3	118	44	167	
70		119	45	168	
71		120		169	
72		121	47	170	97
73	4	122	49	171	
74		123	50	172	
75		124	51	173	

TABLE 6 CONT'D.

ADMINISTRATION II

CA 108-131
N = 177
TOTAL RAW SCORE

Raw Score	Percentile	Raw Score	Percentile	Raw Score	Percentile
76	4	125	51	174	98
77		126	52	175	
78		127	53	176	
79		128	55	177	99
80		129	57	178	
81	5	130	58	179	
82		131	60	180	99
83	7	132	61	181	
84		133	62	182	
85		134	64	183	
86		135	65	184	
87	9	136	66	185	
88	10	137	67	186	

TABLE 7
ADMINISTRATION II
CA 132 - 155
N - 177

Raw Subscales Score	Percentile			
	SH	I	C	SS
10			1	1
11			1	1
12		1	1	2
13		2	2	3
14		3	3	5
15		5	4	7
16	1	6	5	10
17	1	8	7	14
18	2	9		16
19	4	12	9	18
20			10	20
21		16	12	23
22	5	18	14	26
23	7	20	17	30
24	8	23	21	35
25	11	25	24	41
26	13	29	27	46
27	14	34	32	50
28	16	40	36	53
29	18	45	40	55
30	20	49	43	58
31	22	52	48	62
32	23	57	53	65
33	24	60	58	70
34	25	64	64	75
35	27	68	68	79
36	29	73	70	84
37	30	79	74	87
38	32	84	81	88
39	35	88	87	91
40	37	95	95	94
41	38			
42	41			
43	44			
44	47			
45	51			

TABLE 7 CONT'D.

ADMINISTRATION II

CA 132 - 155
N = 177

Percentile

Raw Subscales Score	SH	I	C	SS
46	53			
47				
48	55			
49	58			
50	63			
51	65			
52	68			
53	71			
54	75			
55	79			
56	84			
57	88			
58	91			
59	95			
60	99			

TABLE 8
ADMINISTRATION II
CA 132-155
N = 177
TOTAL RAW SCORE

Raw Score	Percentile	Raw Score	Percentile	Raw Score	Percentile
40		89		138	
41		90	12	139	55
42		91		140	56
43		92	14	141	
44		93	15	142	
45		94		143	58
46		95		144	59
47		96	16	145	60
48		97	16	146	61
49		98	17	147	62
50		99	17	148	64
51		100	18	149	
52		101	19	150	66
53		102	20	151	67
54		103	21	152	69
55		104	21	153	
56		105	22	154	71
57	1	106	23	155	72
58		107	24	156	
59		108	25	157	73
60		109	26	158	75
61		110		159	76
62	3	111	27	160	77
63		112	28	161	79
64		113	29	162	
65	4	114	31	163	80
66		115		164	82
67		116	33	165	84
68		117	34	166	86
69	4	118	35	167	87
70		119	36	168	88
71		120	37	169	89
72		121		170	90
73	5	122	38	171	92
74	5	123	39	172	93
75	6	124	40	173	95

TABLE 8 CONT'D.

ADMINISTRATION II

CA 132-155
N = 177
TOTAL RAW SCORE

Raw Score	Percentile	Raw Score	Percentile	Raw Score	Percentile
76	7	125	42	174	
77	8	126	43	175	95
78	8	127	44	176	96
79		128		177	
80	9	129	45	178	97
81		130	46	179	
82		131	47	180	
83	9	132	48	181	
84		133	49	182	99
85		134		183	
86	10	135	50	184	
87	11	136	51	185	
88	12	137	53	186	

TABLE 9
ADMINISTRATION II
CA 156 - 179
N = 115

Raw Subscales Score	Percentile			
	SH	I	C	SS
10		1	1	
11				1
12				
13				
14			1	
15				
16		2		2
17	1			
18				5
19		4	3	8
20	2	7	4	11
21		10		15
22		12	5	20
23	4	15	7	25
24	5	19	11	27
25		25	14	32
26	6	29	19	37
27		33	26	40
28	7	39	31	42
29	9	44	36	47
30	11	49	41	53
31	12	52	45	57
32	14	55	50	63
33		60	54	69
34	15	65	59	74
35	16	71	64	78
36	17	76	68	82
37	18	83	73	84
38	20	88	81	88
39	22	91	88	93
40	24	97	95	95
41	27			96
42	30			98
43	33			
44	35			
45	38			

TABLE 9 CONT'D.

ADMINISTRATION II

CA 156 - 179
N = 115

Percentile

Raw Subscales Score	SH	I	C	SS
46	40			
47	42			
48	43			
49	45			
50	51			
51	56			
52	60			
53	65			
54	67			
55	70			
56	75			
57	78			
58	83			
59	92			
60	99			

TABLE 10
ADMINISTRATION II
CA 156-179
N = 115
TOTAL RAW SCORE

Raw Score	Percentile	Raw Score	Percentile	Raw Score	Percentile
40	—	89	—	138	45
41	—	90	4	139	—
42	—	91	—	140	—
43	—	92	—	141	47
44	—	93	—	142	—
45	—	94	—	143	—
46	—	95	5	144	53
47	—	96	7	145	55
48	1	97	8	146	57
49	—	98	—	147	58
50	—	99	—	148	59
51	—	100	10	149	60
52	—	101	—	150	62
53	—	102	11	151	64
54	—	103	12	152	67
55	—	104	13	153	—
56	—	105	—	154	—
57	—	106	14	155	69
58	—	107	16	156	70
59	—	108	—	157	71
60	—	109	17	158	—
61	—	110	—	159	—
62	—	111	18	160	73
63	—	112	19	161	—
64	—	113	20	162	74
65	—	114	22	163	76
66	—	115	23	164	78
67	—	116	24	165	79
68	—	117	26	166	81
69	—	118	27	167	83
70	1	119	29	168	85
71	—	120	30	169	87
72	—	121	31	170	88
73	—	122	33	171	90
74	—	123	34	172	91
75		124	35	173	92

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TABLE 10 CONT'D.

ADMINISTRATION II

CA 156-179
N = 115
TOTAL RAW SCORE

Raw Score	Percentile	Raw Score	Percentile	Raw Score	Percentile
76		125	36	174	95
77		126	37	175	
78		127	38	176	98
79		128		177	99
80		129		178	
81		130		179	
82		131		180	
83	2	132	39	181	99
84		133	40	182	
85		134	42	183	
86		135		184	
87		136	43	185	
88		137	44	186	

TABLE 11
ADMINISTRATION II
CA 180 - 203
N = 98

Raw Subscales Score	Percentile SH	I	C	SS
10				
11				
12				
13			1	
14				1
15		1		3
16				5
17		2		
18				
19				
20		5		
21			3	6
22		7	4	7
23	1	9		10
24				
25		12	8	14
26		13		17
27		16	11	19
28	2	21	17	22
29		28	24	27
30	4	34	29	32
31	6	38	32	38
32		43	37	46
33	8	47	43	58
34	9	55	51	65
35		64	60	70
36		72	66	76
37	10	82	73	81
38		88	81	85
39		93	87	90
40	12	98	94	93
41	14			95
42	15			98
43	16			
44				
45	17			

TABLE 11 CONT'D.

ADMINISTRATION II

CA 180 - 203
N = 98

Raw Subscales Score	Percentile SH	I	C	SS
46	19			
47	21			
48	23			
49	27			
50	31			
51	33			
52	35			
53	37			
54	42			
55	51			
56	59			
57	66			
58	76			
59	88			
60	97			

TABLE 12
ADMINISTRATION II
CA 180-203
N = 98
TOTAL RAW SCORE

Raw Score	Percentile	Raw Score	Percentile	Raw Score	Percentile
40	—	89	2	138	25
41	—	90	—	139	26
42	—	91	—	140	—
43	—	92	—	141	29
44	—	93	3	142	—
45	—	94	4	143	31
46	—	95	—	144	—
47	—	96	—	145	32
48	—	97	5	146	—
49	—	98	—	147	35
50	—	99	—	148	38
51	—	100	6	149	—
52	—	101	—	150	40
53	—	102	—	151	41
54	—	103	—	152	43
55	—	104	—	153	46
56	—	105	7	154	51
57	—	106	—	155	54
58	—	107	8	156	56
59	—	108	—	157	58
60	—	109	—	158	60
61	—	110	9	159	63
62	—	111	—	160	—
63	—	112	—	161	67
64	—	113	10	162	72
65	—	114	11	163	79
66	—	115	—	164	82
67	—	116	—	165	84
68	—	117	—	166	—
69	—	118	—	167	85
70	—	119	—	168	86
71	—	120	12	169	—
72	—	121	—	170	—
73	—	122	—	171	88
74	—	123	13	172	90
75	—	124	—	173	92
		125	14	174	93

TABLE 12 CONT'D.

ADMINISTRATION II
CA 180-203
N = 98
TOTAL RAW SCORE

Raw Score	Percentile	Raw Score	Percentile	Raw Score	Percentile
76		125	14	174	93
77		126		175	
78		127		176	95
79		128	15	177	
80		129	17	178	97
81		130	19	179	98
82		131	20	180	
83		132		181	
84		133		182	99
85		134	21	183	
86		135	23	184	
87		136		185	
88		137	24	186	

TABLE 13
ADMINISTRATION II
CA 204 +
N = 86

Raw Subscales Score	Percentile SH	I	C	SS
10				
11			1	
12				1
13				
14				
15				
16			2	2
17			3	
18		1		3
19			6	
20		3		5
21		5		7
22		8	8	9
23				10
24	1	10	9	12
25		12	11	15
26		16	13	19
27	2	19	16	26
28	3	23	20	34
29	5	27	26	37
30	6	33	31	40
31	8	38	35	45
32		44	39	51
33	9		44	55
34		51	52	60
35	10	59	59	66
36	13	67	65	71
37	15	72	75	75
38	17	76	87	81
39	18	81	94	88
40	20	92	98	92
41	22			95
42	24			98
43				
44	25			
45	27			

TABLE 13 CONT'D.

ADMINISTRATION II

CA 204 +
N = 86

Percentile

Raw Subscales Score	SH	I	C	SS
46	28			
47	30			
48	33			
49	36			
50	38			
51	43			
52	48			
53	51			
54	58			
55	63			
56	66			
57	72			
58	80			
59	90			
60	97			

TABLE 14
ADMINISTRATION II
CA 204+
N = 86
TOTAL RAW SCORE

Raw Score	Percentile	Raw Score	Percentile	Raw Score	Percentile
40		89		138	
41		90		139	
42		91		140	32
43		92	3	141	34
44		93		142	37
45		94		143	39
46		95		144	41
47		96		145	42
48		97	4	146	44
49		98		147	45
50		99		148	46
51		100	5	149	
52		101	6	150	
53		102	8	151	48
54		103		152	53
55		104		153	57
56		105		154	
57		106		155	59
58		107		156	
59		108		157	63
60		109	9	158	66
61		110	10	159	67
62		111	12	160	68
63		112	13	161	69
64		113		162	72
65		114		163	76
66		115		164	
67		116		165	
68		117		166	
69		118		167	81
70		119		168	
71		120		169	85
72		121		170	
73		122	15	171	87
74		123	16	172	88
75		124	18	173	

TABLE 14 CONT'D.

ADMINISTRATION II

CA 204 +
N = 86
TOTAL RAW SCORE

Raw Score	Percentile	Raw Score	Percentile	Raw Score	Percentile
76		125	19	174	90
77		126	20	175	93
78		127	22	176	95
79	1	128		177	96
80		129	23	178	
81		130	24	179	98
82		131		180	99
83		132		181	
84		133		182	
85		134	25	183	
86		135	26	184	
87		136	28	185	
88	2	137	30	186	

Appendix G. Percentile equivalents of Cain-Levine raw scores at third testing.

Table 1.	Subscale scores.	CA 60-83 months
Table 2.	Total score.	CA 60-83 months
Table 3.	Subscale scores.	CA 84-107 months
Table 4.	Total score.	CA 84-107 months
Table 5.	Subscale scores.	CA 108-131 months
Table 6.	Total score.	CA 108-131 months
Table 7.	Subscale scores.	CA 132-155 months
Table 8.	Total score.	CA 132-155 months
Table 9.	Subscale scores.	CA 156-179 months
Table 10.	Total score.	CA 156-179 months
Table 11.	Subscale scores.	CA 180-203 months
Table 12.	Total score.	CA 180-203 months
Table 13.	Subscale scores.	CA 204 months and above
Table 14.	Total score.	CA 204 months and above

TABLE I
ADMINISTRATION III
CA 60-83
N = 6

Raw Subscales Score	Percentile SH	I	C	SS
10				
11				
12				
13				17
14				
15				
16				
17			8	
18				
19		8		50
20		33	33	
21			58	
22				
23				
24				75
25	8			
26				
27		58		92
28		75	75	
29	25			
30				
31	42			
32				
33				
34			92	
35	58			
36				
37		92		
38				
39				
40	75			
41				
42				
43				
44				
45				

TABLE I CONT'D.

ADMINISTRATION III

CA 60-83
N = 6

Percentile

Raw Subscale Score	SH	I	C	SS
46	——	——	——	——
47	——	——	——	——
48	92	——	——	——
49	——	——	——	——
50	——	——	——	——
51	——	——	——	——
52	——	——	——	——
53	——	——	——	——
54	——	——	——	——
55	——	——	——	——
56	——	——	——	——
57	——	——	——	——
58	——	——	——	——
59	——	——	——	——
60	——	——	——	——

TABLE 2
ADMINISTRATION III
CA 60-83
N = 6
TOTAL RAW SCORE

Raw Score	Percentile	Raw Score	Percentile	Raw Score	Percentile
40	—	89	—	138	—
41	—	90	—	139	—
42	—	91	—	140	—
43	—	92	—	141	—
44	—	93	—	142	—
45	—	94	—	143	—
46	—	95	—	144	—
47	—	96	—	145	—
48	—	97	—	146	—
49	—	98	—	147	—
50	—	99	—	148	—
51	—	100	—	149	—
52	—	101	—	150	—
53	—	102	—	151	—
54	—	103	—	152	—
55	—	104	58	153	—
56	—	105	—	154	—
57	—	106	—	155	—
58	—	107	—	156	—
59	—	108	—	157	—
60	—	109	—	158	—
61	—	110	—	159	—
62	—	111	—	160	—
63	—	112	—	161	—
64	—	113	—	162	—
65	—	114	—	163	—
66	—	115	—	164	—
67	—	116	—	165	—
68	—	117	—	166	—
69	—	118	—	167	—
70	—	119	—	168	—
71	—	120	—	169	—
72	—	121	—	170	—
73	—	122	—	171	—
74	—	123	—	172	—
75	—	124	—	173	—

TABLE 2 CONT'D.

ADMINISTRATION III

CA 60-83
N = 6

Raw Score	Percentile	Raw Score	Percentile	Raw Score	Percentile
76		125		174	
77		126		175	
78		127	75	176	
79		128		177	
80		129		178	
81		130		179	
82	8	131		180	
83	25	132		181	
84		133	92	182	
85	42	134		183	
86		135		184	
87		136		185	
88		137		186	

TABLE 3
ADMINISTRATION III
CA 84-107
N = 62

Raw Subscales Score	Percentile SH	I	C	SS
10			1	
11		1	2	
12			4	1
13				2
14		2	6	5
15		4		7
16			7	11
17				16
18	1	6		20
19		12	9	24
20	2	19		31
21		23	10	43
22	4	28	15	50
23	6	31	20	54
24	11	35	23	60
25		42	30	65
26		46	38	69
27	18	51		74
28	25	56	44	79
29	30		48	82
30	32	63	52	85
31	35	73	59	88
32	38	80		92
33	42	84	66	95
34	45	87	71	98
35	48	90	74	
36	51	94	78	
37		98	82	
38	56		89	
39	60		94	
40	63		98	
41	66			99
42	69			
43	73			
44	77			
45	80			

TABLE 3 CONT'D.

ADMINISTRATION III

CA 84-107
N = 62

Percentile

Raw Subscales Score	SH	I	C	SS
46	82			
47	85			
48	87			
49	90			
50	93			
51	95			
52				
53	98			
54				
55				
56				
57				
58				
59				
60				

TABLE 4
ADMINISTRATION III
CA 84-107
N = 62
TOTAL RAW SCORE

Raw Score	Percentile	Raw Score	Percentile	Raw Score	Percentile
40		89	12	138	83
41		90		139	85
42		91		140	
43		92		141	88
44		93	14	142	
45		94	17	143	90
46		95	21	144	
47		96	25	145	93
48		97	28	146	
49		98		147	
50		99	31	148	
51		100		149	
52		101		150	
53	1	102		151	94
54		103	36	152	
55		104	38	153	96
56		105		154	
57		106	40	155	98
58		107		156	
59		108	41	157	
60		109	43	158	
61		110		159	
62	2	111		160	
63		112	44	161	
64	4	113	46	162	
65	6	114	48	163	
66		115	49	164	
67		116		165	
68		117	51	166	
69		118	52	167	
70		119		168	99
71		120		169	
72		121	54	170	
73		122	56	171	
74		123		172	
75		124	59	173	

TABLE 4 CONT'D.

ADMINISTRATION III

CA 84-107
N = 62
TOTAL RAW SCORE

Raw Score	Percentile	Raw Score	Percentile	Raw Score	Percentile
76		125		174	
77		126	62	175	
78		127	64	176	
79		128		177	
80	7	129	66	178	
81		130	69	179	
82		131		180	
83		132	70	181	
84		133	72	182	
85		134	75	183	
86	9	135		184	
87	10	136	78	185	
88		137	81	186	

TABLE 5
ADMINISTRATION III
CA 108-131
N = 59

Raw Subscales Score	Percentile SH	I	C	SS
10		1	1	1
11			1	
12		2		1
13		2		3
14	1	3	3	5
15		4		8
16		6	4	10
17	2	7	5	12
18		9		15
19		9	6	20
20	2	14	8	25
21		17	10	29
22	3	19	12	32
23	4	22	16	36
24	6	26	19	41
25	8	31	23	45
26	9		27	49
27	12	37	31	52
28	16	42	37	55
29	20	44	42	60
30		48	47	65
31	20	55	50	69
32	22	61	54	72
33	26	65	59	75
34	30	68	66	79
35	35	73	72	82
36	40	77	76	84
37	43	80	83	87
38		83	89	90
39	46	86	92	92
40	48	94	97	95
41	51			97
42	55			99
43	58			
44	60			
45	63			

TABLE 5
CON'T.
ADMINISTRATION III
CA 108-131
N = 59
Percentile

Raw Subscales Score	SH	I	C	SS
46	66			
47	70			
48	72			
49	75			
50	77			
51	80			
52	82			
53	84			
54	87			
55	91			
56	93			
57	95			
58	97			
59	99			
60	99			

TABLE 6
ADMINISTRATION III
CA 108-131
N = 159
TOTAL RAW SCORE

Raw Score	Percentile	Raw Score	Percentile	Raw Score	Percentile
40	—	89	—	138	61
41	—	90	13	139	62
42	—	91	14	140	63
43	—	92	15	141	64
44	1	93	—	142	66
45	—	94	15	143	67
46	—	95	—	144	—
47	1	96	—	145	68
48	—	97	16	146	69
49	—	98	17	147	70
50	—	99	—	148	72
51	—	100	18	149	73
52	—	101	19	150	75
53	—	102	20	151	78
54	—	103	—	152	—
55	—	104	20	153	—
56	2	105	21	154	80
57	—	106	23	155	81
58	—	107	24	156	82
59	—	108	25	157	84
60	—	109	27	158	86
61	—	110	30	159	—
62	2	111	33	160	86
63	—	112	—	161	—
64	—	113	35	162	87
65	—	114	36	163	88
66	—	115	38	164	88
67	—	116	—	165	89
68	—	117	39	166	90
69	—	118	40	167	91
70	3	119	41	168	—
71	—	120	43	169	92
72	—	121	45	170	—
73	3	122	46	171	93
74	4	123	46	172	94
75	—	124	48	173	96

TABLE 6
CON'T.
ADMINISTRATION III
CA 108-131
N = 159
TOTAL RAW SCORE

Raw Score	Percentile	Raw Score	Percentile	Raw Score	Percentile
76		125	49	174	97
77	5	126	50	175	
78		127	52	176	
79		128	53	177	98
80	6	129	54	178	
81	7	130	55	179	99
82		131		180	99
83	7	132		181	
84	8	133	56	182	
85		134	57	183	
86		135	59	184	
87	10	136		185	
88	11	137	60	186	

TABLE 7
ADMINISTRATION III
CA 132-155
N = 141

Raw Subscales Score	Percentile			
	SH	I	C	SS
10		1	1	1
11		1	1	
12		2		2
13		2	3	3
14		4	5	4
15	1		6	6
16	1	6		10
17		9		13
18		10	7	15
19	2		8	17
20		11	10	20
21		12	11	24
22	4	16	12	31
23	6	19	15	34
24		20	18	38
25	8	23	22	41
26	9	27	26	43
27	11	30	30	46
28	13	33	36	51
29	15	38	40	55
30		45	45	58
31	17	49	49	61
32	19	52	56	69
33	22	59	59	74
34	24	66	64	76
35	27	72	69	79
36	29	76	73	83
37	30	80	77	88
38	32	84	81	91
39	34	90	89	93
40	36	96	96	96
41	38			
42	41			99
43	43			
44	48			
45	51			

TABLE 7
CON'T.
ADMINISTRATION III
CA 132-155
N=141
Percentile

Raw Subscales Score	SH	I	C	SS
46	54			
47	59			
48	64			
49	69			
50	72			
51	75			
52				
53	78			
54	81			
55	84			
56	85			
57	87			
58	90			
59	95			
60	99			

TABLE 8
ADMINISTRATION III
CA 132-155
N = 141
TOTAL RAW SCORE

Raw Score	Percentile	Raw Score	Percentile	Raw Score	Percentile
40		89	10	138	56
41		90	11	139	58
42		91		140	60
43		92		141	61
44		93		142	62
45		94	12	143	63
46		95	14	144	64
47		96		145	65
48		97		146	66
49		98	15	147	67
50	1	99	16	148	68
51		100	17	149	69
52		101	18	150	70
53		102		151	72
54		103	19	152	73
55		104		153	
56	1	105		154	75
57		106	20	155	77
58	2	107	21	156	78
59	2	108	22	157	79
60		109	23	158	80
61		110	24	159	81
62		111	25	160	82
63		112	27	161	
64	3	113		162	83
65		114	28	163	85
66		115	30	164	85
67		116	31	165	86
68		117	33	166	88
69		118		167	89
70		119	34	168	90
71	4	120	35	169	91
72		121	37	170	92
73		122	39	171	94
74	5	123	39	172	
75		124	40	173	96

TABLE 8
CON'T.
ADMINISTRATION III
CA 132-155
N = 141
TOTAL RAW SCORE

Raw Score	Percentile	Raw Score	Percentile	Raw Score	Percentile
76	5	125	41	174	98
77		126	41	175	98
78	6	127		176	
79		128	42	177	
80		129	44	178	
81		130	45	179	
82		131	46	180	
33	7	132	47	181	
84	8	133		182	99
85		134	48	183	
86		135	49	184	
87	9	136	50	185	
88		137	54	186	

TABLE 9
ADMINISTRATION III
CA 156 - 179
N = 116

Raw Subscales Score	Percentile SH	I	C	SS
10				
11		1		1
12			1	2
13		1	2	3
14		3		
15				4
16		4	3	6
17				9
18		6		12
19		7		15
20		9	4	18
21	1	11	6	20
22	3	14	9	22
23	4		11	26
24	6	20	13	30
25	9	25	17	34
26	11	27	24	40
27	12	31	30	46
28	14	34	35	50
29	16	40	41	52
30	17	45	47	55
31		49	53	60
32	18	53	59	64
33	19	57	62	68
34	20	62	65	73
35	21	63	68	78
36	23	69	72	81
37	25	77	78	83
38	28	83	85	85
39	30	87	91	90
40	31	94	97	94
41	33			96
42	35			99
43	37			
44	40			
45	41			

TABLE 9 CONT'D.

ADMINISTRATION III

CA 156-179
N = 116

Percentile

Raw Subscales Score	SH	I	C	SS
46	42			
47	44			
48	49			
49	52			
50	57			
51	61			
52	64			
53				
54	69			
55	74			
56	78			
57	83			
58	88			
59	94			
60	99			

TABLE 10
ADMINISTRATION III
CA 156-179
N = 116
TOTAL RAW SCORE

Raw Score	Percentile	Raw Score	Percentile	Raw Score	Percentile
40		89		138	51
41		90	8	139	52
42		91	9	140	53
43		92	11	141	
44		93		142	
45		94		143	
46		95	12	144	54
47		96	12	145	56
48		97	13	146	58
49		98	14	147	60
50		99		148	63
51		100	15	149	
52		101		150	64
53		102	16	151	
54		103	17	152	67
55		104	18	153	
56		105	20	154	68
57		106	22	155	
58	1	107	23	156	69
59		108		157	70
60		109	24	158	71
61		110	25	159	74
62		111		160	76
63		112	25	161	
64		113		162	78
65		114	27	163	
66		115		164	
67		116	28	165	81
68		117	29	166	83
69		118	31	167	
70		119	32	168	84
71		120		169	85
72		121	33	170	87
73	1	122	34	171	89
74	2	123		172	91
75		124		173	

TABLE 10
CON'T.
ADMINISTRATION III
CA 156-179
N = 116
TOTAL RAW SCORE

Raw Score	Percentile	Raw Score	Percentile	Raw Score	Percentile
76		125	36	174	
77	3	126		175	92
78	4	127		176	94
79		128	37	177	96
80		129	38	178	98
81	6	130	40	179	99
82		131	41	180	
83		132	43	181	
84		133	44	182	
85	6	134	45	183	
86		135	46	184	
87		136	49	185	
88		137		186	

TABLE 11

ADMINISTRATION III

CA 180-203
N = 84

Raw Subscales Score	Percentile			
	SH	I	C	SS
10				
11				
12				
13				
14			1	
15				
16				
17				
18				
19				
20				1
21		1	2	2
22		4	4	3
23		5		5
24		7	5	8
25	1	10		10
26		13	7	12
27		17	11	14
28		20	15	19
29	2	23	18	26
30	3	29	23	33
31	4	36	28	39
32	5	40	31	43
33		43	36	51
34		47	42	58
35		55	45	61
36	7	63	50	64
37	8	70	57	71
38	9	79	64	80
39		86	71	85
40		95	88	88
41				92
42	10			97
43	11			
44	14			
45	18			

TABLE 11
CON'T.
ADMINISTRATION III
CA 180-203
N = 84

Percentile

Raw Subscales Score	SH	I	C	SS
46	21			
47	22			
48	24			
49	30			
50	35			
51				
52	39			
53				
54	43			
55	48			
56	55			
57	64			
58	73			
59	86			
60	97			

TABLE 12
ADMINISTRATION III
CA 180-203
N = 84
TOTAL RAW SCORE

Raw Score	Percentile	Raw Score	Percentile	Raw Score	Percentile
40	—	89	—	138	—
41	—	90	—	139	23
42	—	91	—	140	24
43	—	92	—	141	26
44	—	93	—	142	29
45	—	94	—	143	32
46	—	95	—	144	33
47	—	96	—	145	35
48	—	97	—	146	36
49	—	98	—	147	38
50	—	99	—	148	—
51	—	100	1	149	—
52	—	101	2	150	41
53	—	102	—	151	43
54	—	103	—	152	45
55	—	104	—	153	—
56	—	105	—	154	46
57	—	106	—	155	49
58	—	107	—	156	52
59	—	108	—	157	54
60	—	109	3	158	—
61	—	110	—	159	57
62	—	111	—	160	—
63	—	112	4	161	59
64	—	113	—	162	62
65	—	114	5	163	—
66	—	115	—	164	—
67	—	116	7	165	67
68	—	117	—	166	69
69	—	118	—	167	72
70	—	119	—	168	75
71	—	120	—	169	77
72	—	121	8	170	79
73	—	122	—	171	82
74	—	123	—	172	84
75	—	124	9	173	86

TABLE 12
CON'T.

ADMINISTRATION III
CA 180-203
N = 84
TOTAL RAW SCORE

Raw Score	Percentile	Raw Score	Percentile	Raw Score	Percentile
76		125	10	174	87
77		126		175	89
78		127	12	176	
79		128		177	91
80		129	15	178	92
81		130	16	179	
82		131		180	
83		132	18	181	95
84		133	20	182	99
85		134	21	183	
86		135	22	184	
87		136		185	
88		137		186	

TABLE 13

ADMINISTRATION III

CA 204 +
N = 89

Raw Subscales Score	Percentile			
	SH	I	C	SS
10				
11				
12				
13				
14				
15			1	
16				1
17			3	
18			4	
19				
20		1		
21			6	3
22		3	8	6
23			10	10
24		5	11	12
25	1	7		15
26		11		
27	2		13	19
28		16	14	22
29		20	15	27
30		24	18	34
31	4	31	26	39
32	5	37	35	43
33	6	40	40	47
34		43	45	51
35		50	52	56
36		58	58	61
37		65	65	66
38		73	71	74
39	7	80	83	81
40	8	93	94	87
41	11			92
42	14			97
43				
44				

TABLE 13
CON'T.
ADMINISTRATION III
CA 204 +
N =89

Raw Subscales Score	Percentile			
	SH	I	C	SS
45	15			
46	19			
47	23			
48	28			
49	32			
50	34			
51	37			
52	41			
53	44			
54	48			
55	51			
56	54			
57	61			
58	69			
59	76			
60	91			

TABLE 14
ADMINISTRATION III
CA 204+
N = 89
TOTAL RAW SCORE

Raw Score	Percentile	Raw Score	Percentile	Raw Score	Percentile
40	—	89	—	138	23
41	—	90	—	139	—
42	—	91	—	140	25
43	—	92	—	141	—
44	—	93	—	142	28
45	—	94	—	143	—
46	—	95	—	144	31
47	—	96	—	145	33
48	—	97	—	146	35
49	—	98	—	147	37
50	—	99	—	148	39
51	—	100	2	149	—
52	—	101	3	150	—
53	—	102	4	151	—
54	—	103	6	152	42
55	—	104	—	153	43
56	—	105	—	154	44
57	—	106	—	155	46
58	—	107	—	156	48
59	—	108	—	157	50
60	—	109	—	158	54
61	—	110	7	159	57
62	—	111	—	160	60
63	—	112	—	161	61
64	—	113	8	162	—
65	—	114	—	163	63
66	—	115	—	164	—
67	—	116	—	165	65
68	—	117	—	166	—
69	—	118	—	167	67
70	—	119	10	168	70
71	—	120	—	169	74
72	—	121	—	170	78
73	—	122	11	171	79
74	—	123	—	172	—
75	—	124	—	173	83

TABLE 14
CON'T.
ADMINISTRATION III
CA 204+
N =89
TOTAL RAW SCORE

Raw Score	Percentile	Raw Score	Percentile	Raw Score	Percentile
76		125		174	87
77		126		175	89
78		127		176	90
79		128		177	92
80		129	12	178	94
81		130	13	179	96
82		131		180	97
83		132	17	181	98
84		133	20	182	99
85		134	21	183	
86		135	22	184	
87		136		185	
88		137		186	

Appendix H. "Best-fit" curves: mean raw score across CA for original normative sample and Wayne County sample.

Figure 1. Communication

Figure 2. Self Help

Figure 3. Initiative

Figure 4. Social Skills

Figure 5. Total Score

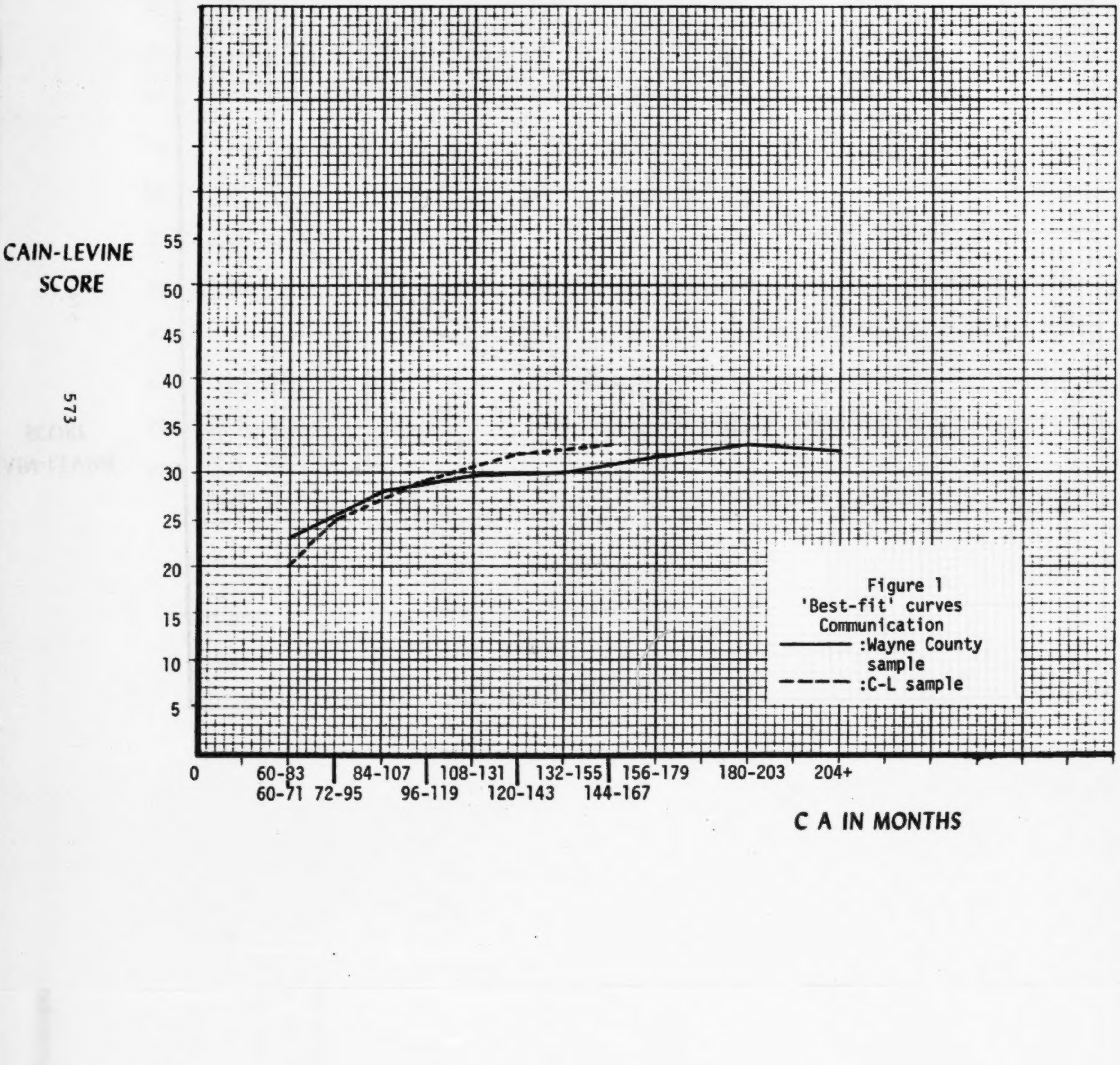

Figure 1
'Best-fit' curves
Communication

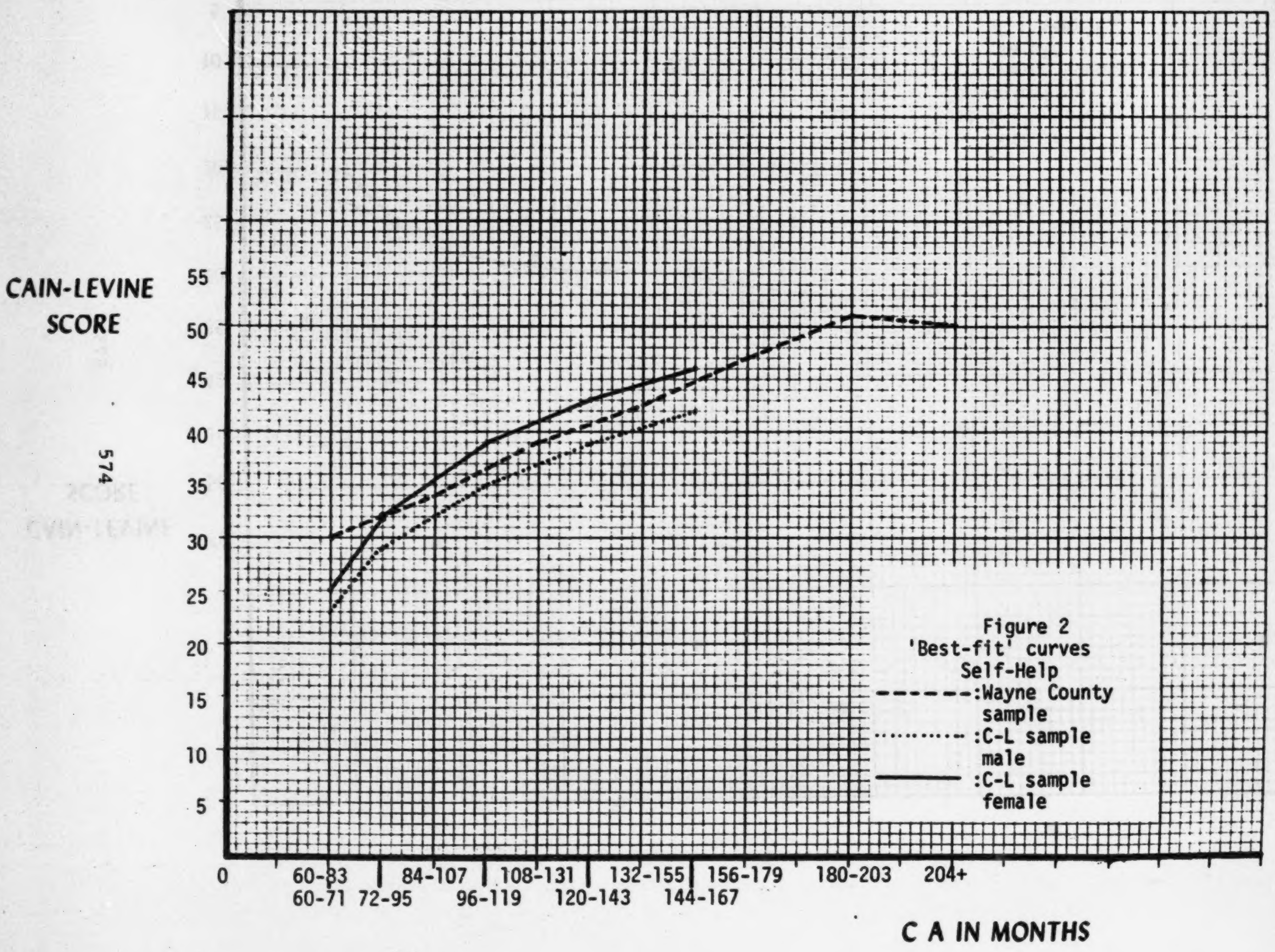

Figure 2
'Best-fit' curves
Self-Help

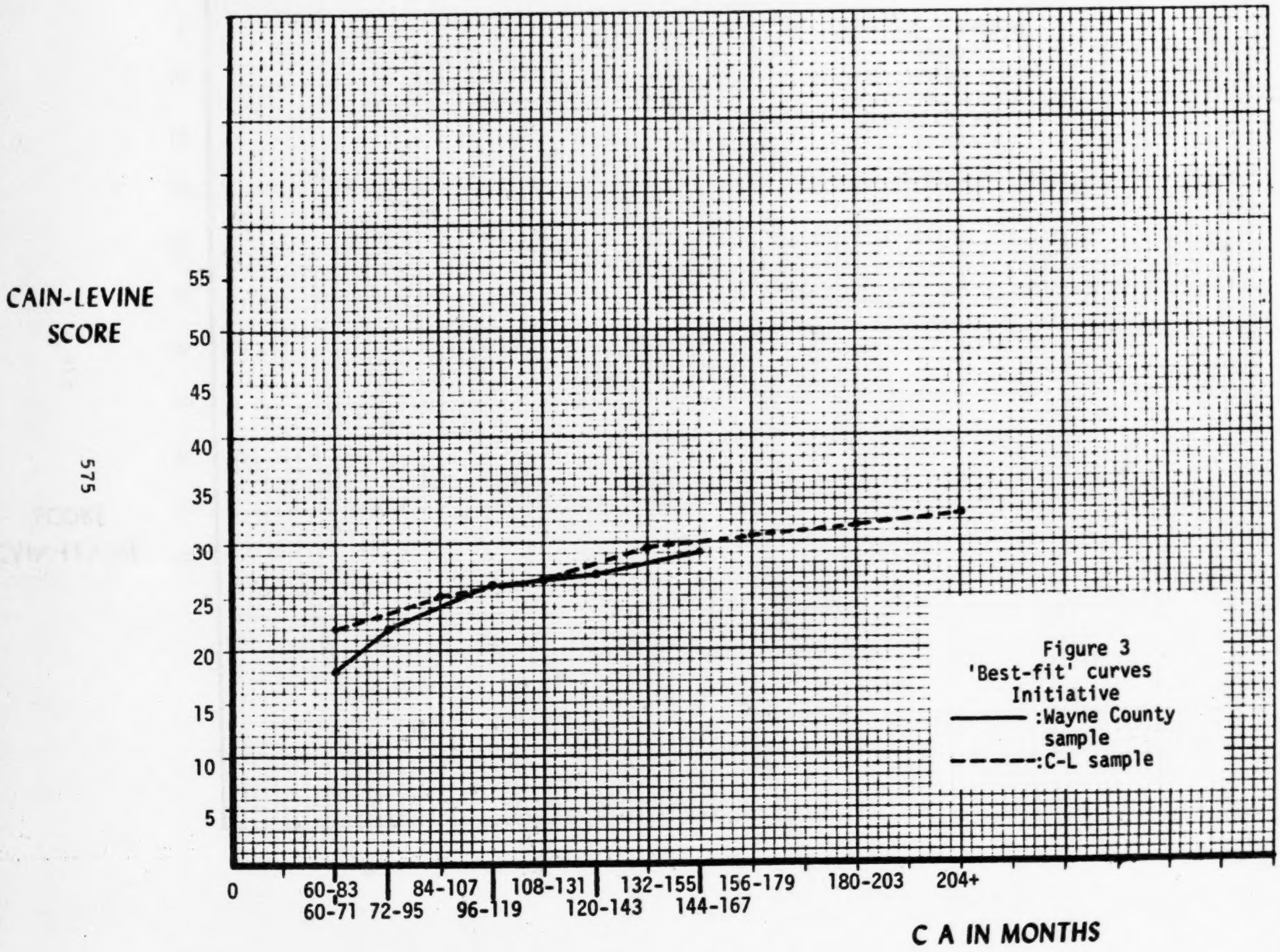

Figure 3
'Best-fit' curves
Initiative

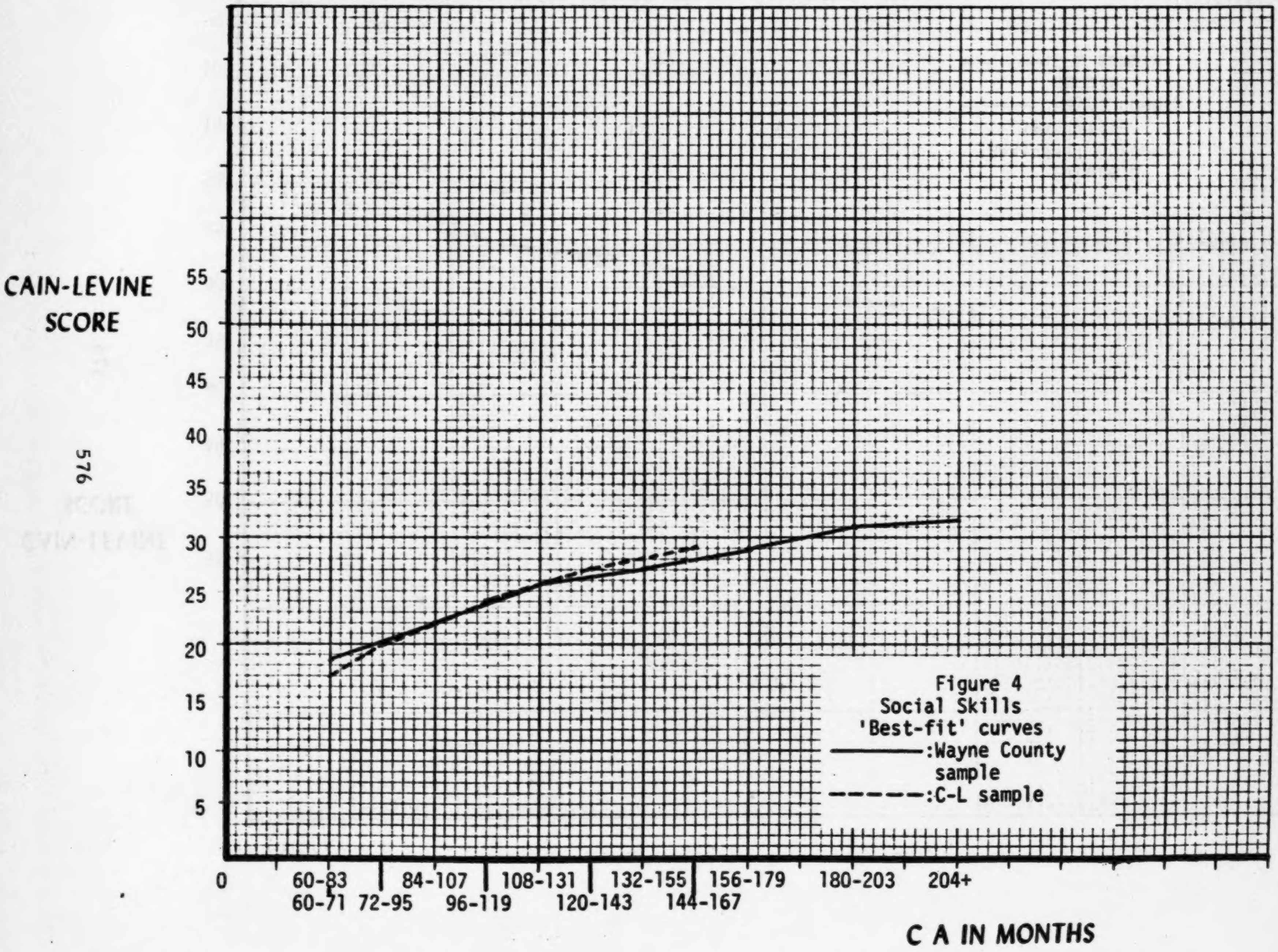

Figure 4
Social Skills
'Best-fit' curves

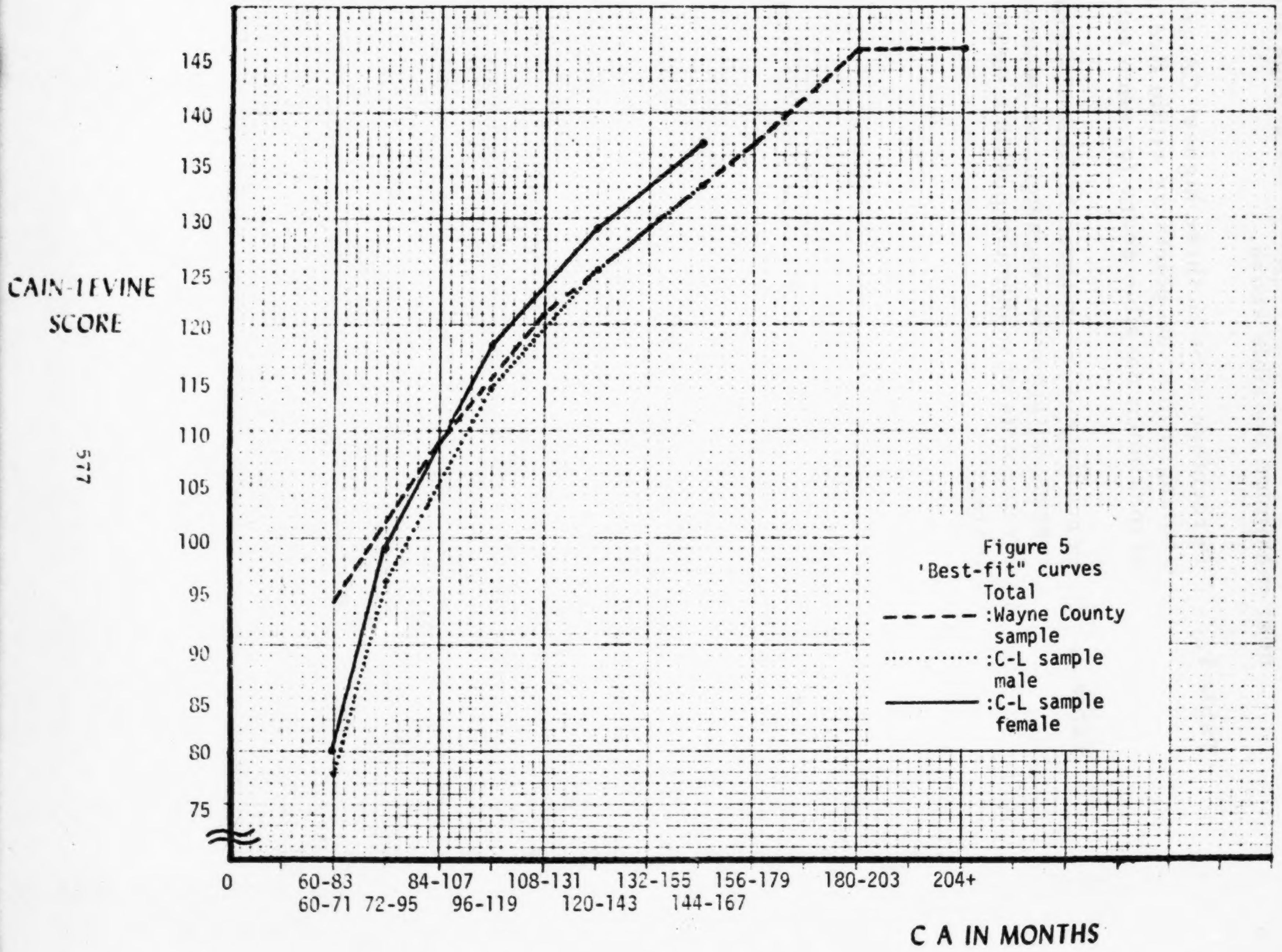

Figure 5
'Best-fit" curves
Total

Appendix I. Percentage of Ss in three highest CA groups scoring near maximum possible score.

Table 1. Percentage of Ss in three highest CA groups scoring within two points or within five points of maximum possible score for each subscale.

Table 2. Percentage of Ss in three highest CA groups scoring within nine, eighteen, or twenty-seven points of maximum possible total score.

TABLE 1

PERCENTAGE OF SUBJECTS IN THE TOP THREE CHRONOLOGICAL AGE GROUP SHOWING WITHIN TWO POINTS AND WITHIN FIVE POINTS OF THE MAXIMUM SCORE ON EACH CAIN LEVINE SUBSCALE

		INITIATIVE (Maximum = 40 pts.)		SOCIAL SKILLS (Maximum = 42 pts.)		COMMUNICATION (Maximum = 40 pts.)		SELF HELP (Maximum = 60 pts.)	
		Within 2 pts.	Within 5 pts.	Within 2 pts.	Within 5 pts.	Within 2 pts.	Within 5 pts.	Within 2 pts.	Within 5 pts.
Adm. I	CA 156-179 N = 116	21.6	35.3	6.9	19.0	22.4	43.1	18.1	35.3
	CA 180-203 N = 106	21.7	35.8	8.5	17.9	25.5	43.4	22.6	36.8
	CA 204+ N = 77	16.9	33.8	6.5	16.9	23.4	46.8	20.8	28.6
Adm. II	CA 156-179 N = 115	13.0	31.3	5.2	16.5	22.6	38.3	20.9	31.3
	CA 180-203 N = 98	14.3	38.8	8.2	21.4	22.4	44.9	30.1	54.1
	CA 204+ N = 86	25.6	45.3	9.3	26.7	18.6	43.0	24.4	37.2

TABLE 1

PERCENTAGE OF SUBJECTS IN THE TOP THREE CHRONOLOGICAL AGE GROUP SHOWING WITHIN TWO POINTS AND WITHIN FIVE POINTS OF THE MAXIMUM SCORE ON EACH CAIN LEVINE SUBSCALE

		INITIATIVE (Maximum = 40 pts.)		SOCIAL SKILLS (Maximum = 42 pts.)		COMMUNICATION (Maximum = 40 pts.)		SELF HELP (Maximum = 60 pts.)	
		Within 2 pts.	Within 5 pts.	Within 2 pts.	Within 5 pts.	Within 2 pts.	Within 5 pts.	Within 2 pts.	Within 5 pts.
	CA 156-179 N = 116	19.8	37.1	6.9	18.1	17.2	34.5	13.8	28.4
Adm. III	CA 180-203 N = 84	26.2	50.6	13.1	34.5	38.1	57.1	32.1	54.8
	CA 204+ N = 89	29.2	56.2	15.7	37.1	33.7	51.7	33.7	50.6

TABLE 2

PERCENTAGE OF SUBJECTS IN THE TOP THREE CHRONOLOGICAL AGE GROUPS SCORING WITHIN 9 POINTS (5%), 18 POINTS (10%) AND 27 POINTS (15%) OF THE MAXIMUM POSSIBLE TOTAL CAIN LEVINE SCORE (Maximum points = 182)

	Within 9 Pts. (5%)	Within 19 Pts. (10%)	Within 15 Pts. (15%)
CA 156-179 N = 116	8.7	25.9	36.2
CA 180-203 N = 77	12.3	26.4	37.7
CA 204+ N = 77	9.1	19.5	39.0
CA 156-179 N = 115	8.7	22.6	32.2
CA 180-203 N = 98	9.2	19.4	46.9
CA 204+ N = 86	11.6	22.1	41.9
CA 156-179 N = 116	9.5	19.8	31.9
CA 180-203 N = 84	15.5	34.5	52.4
CA 204+ N = 89	20.2	15.7	52.8

APPENDIX A

TEACHER INFORMATION FORM

WAYNE COUNTY INTERMEDIATE SCHOOL DISTRICT

TEACHER INFORMATION FORM

Code Number

Circle the number opposite the appropriate response, or fill in the blank as indicated:

A. PERSONAL INFORMATION

1. Sex:

Male	1
Female	2

2. MARITAL STATUS:

Single	1
Married	2
Widowed	3
Divorced	4
Separated	5

3. Spouse's occupation (please be specific)____________________

____

(if retired or deceased, indicate what occupation was.)

4. Number of children:

0
1
2
3
4
5 or more

5. Ages of children:

AGE		
______	Male	1
	Female	2
______	Male	1
	Female	2
______	Male	1
	Female	2
______	Male	1
	Female	2

B. TRAINING

1. Circle the number opposite the highest level of your educational attainment and also fill in the year in which you received all earned degrees and from what schools:

School	Year		
____________________	______	High School diploma	1
____________________	______	Some college - no degree	2
____________________	______	College degree	3
____________________	______	Some graduate work-- no degree	4
____________________	______	Master's degree	5
____________________	______	Work past master's no doctorate	6
____________________	______	Earned doctorate	7

2. How many semester hours of credit have you earned past the highest degree attained?____
(This question applies to those circling 2,4, or 6 in the previous question.)

3. Have you had student teaching?	Yes	1
	No	2
4. Grade level of student teaching	K-3	1
	4-6	2
	7-9	3
	10-12	4

5. Courses most closely related to work with the retarded, (i.e., child growth, etc.)

____________________________ ________________________________

____________________________ ________________________________

____________________________ ________________________________

6. CERTIFICATION:

Area	Date	Type
____________	______	________________
____________	______	________________
____________	______	________________

7. How old were you when you decided to become a teacher? ________

8. What were the factors influencing your choice of teaching as a career? ____

____

9. If you could choose any occupation, what would it be? Please list in the order of your preference.

____

____

____

10. If you could choose a grade level to teach, what grade would you choose?

Pre-school	1
Early elementary (1-3)	2
Later elementary (4-6)	3
Junior High (7-8)	4
High school (9-12)	5
College	6

11. What type of child do you prefer to teach?

Trainable retarded	1
Educable retarded	2
Normal - average	3
Gifted	4
Other ____________________ (specify)	5

C. EXPERIENCE:

1. Started teaching in: ____________________ (Date)

2. What is the longest period of time spent between two teaching assignments (summers are not to be counted)

Less than 6 months	1
6 months	2
1 to 2 years	3
2 to 3 years	4
3 to 5 years	5
5 or more years	6

3. Years teaching trainable retarded children ______________
Years teaching educable retarded children ______________

4. Please list other types of children taught, grade level and number of years experience:

Type of child	Grade level	No. Years
____________	____________	____________
____________	____________	____________

5. Total number of years teaching experience.____________________

6. Approximately how many hours a week do you think the average teacher spends in outside preparation for class?________________

7. What bothers you most in a classroom? (If this is your first teaching experience, list those things which you think will be most bothersome to you.

____

____

____

D. GENERAL:

1. What jobs other than teaching have you held?

Job	Dates
______________________	_______________
______________________	_______________
______________________	_______________

2. Other activities and interests:

____

____

____

____

3. Do you have any other relationship to the mentally retarded than through teaching? (Members of family, close friends, etc.)

Relationship	Age	Severity (Educable, Trainable, Other)
___________	___	__________________________
___________	___	__________________________
___________	___	__________________________

4. What do you believe is the greatest asset of a teacher of the trainable child? ____________________________

5. What is the most serious shortcoming?

____

6. List the 5 major goals which you hope to achieve with the trainable retarded children you teach.

____

____

____

____

____

7. Remarks:____

____

____

____

____

____

NAME________________________________

ADDRESS____________________________ CITY______________________

BIRTHDATE__________________ SOCIAL SECURITY NO.________________

What three characteristics do you like best about this child?

What three characteristics do you worry about in this child?

Remarks:

Date

Signature

APPENDIX B

GENERAL INFORMATION - CHILDREN

WAYNE COUNTY INTERMEDIATE SCHOOL DISTRICT

GENERAL INFORMATION - CHILDREN

Name____________________ Sex__________ Birthdate__________

Most recent psychological test:________________ ________________
date given by whom

____________________ ____________________
Agency Test

________________ ________________ ________________
M.A. C.A. Total I.Q.

If available as separate scores: ________________ ________________
Performance I.Q. Verbal I.Q.

To your knowledge is there any notable discrepancy between these psychological assessments and earlier ones? Explain the nature and the direction of the discrepancy; (i.e., a rise or drop in I.Q. points, a rise or drop in an area or skill, and the age at which other assessments were made.)____

____

____

Nature of deficiency: Mongoloid________________ Cretin__________

Hydrocephalic______________ Other__________

Microcephalic______________

Can this child understand and respond to language?____________________

Does he speak?____

Are there any secondary disabilities? Visual__________ Auditory__________

Seizures__________ Muscular dystrophy__________

Cerebral Palsy____ Other brain injury__________

Encephalitis_____ Other__________
(i.e., a fall, birth trauma)

Other fever__________

If any of the above, indicate the source (doctor, parent) of the diagnosis

____

____

If any of the above, indicate age at time of injury or first record__________

____

____

Does he have motor problems (i.e., gait, hands?__________

____

If so, what?__________

____

Siblings: Sex____________________ Age____________________

____________________ ____________________

____________________ ____________________

____________________ ____________________

Father's occupation____________________ Educational level____________________

Age of father: Underline one: 20-30; 30-40; 40-50; 50-60; 60+

Mother's occupation____________________ Educational Level____________________

Age of mother: Underline one: 20-30; 30-40; 40-50; 50-60; 60+

Address____________________ ____________________
(Street) (City)

(If family residence is in Detroit, indicate as follows:)

Detroit____________________
(District)

Check whether single home____________________or multiple dwelling____________________

To your knowledge, are there other retardates in this family, (siblings, either parent, relatives, etc.)? Explain____________________

____

____

____

How long has child been in the present program?________________Age at which he entered:____________Did he have any prior school, group, or institutional experience?____

Where?____________________________________ How long?_________________

____________________________________ _________________

____________________________________ _________________

Do you have any information as to the orientation and/or program of this previously attended school?____

____

____

Did the parents find it satisfactory or not?________________________________

What views did they express about it, if any?______________________________

____

____

APPENDIX C

TEACHER EVALUATION FORM

TEACHER EVALUATION FORM

WAYNE COUNTY INTERMEDIATE SCHOOL DISTRICT

RESEARCH PROJECT

Teacher ______________________________ Date ________________

School Assignment ______________________________

Supervisor (TITLE ONLY) ______________________________

For this evaluation, a supervisor is defined as that person who has immediate supervisory responsibility for the above teacher; i.e., school principal, director of special education.

DIRECTIONS: Check the appropriate position on each scale. The numerical values for each descriptive term on the scale are as follows: Superior = 7; Very Good = 6; Good = 5; Average = 4; Fair = 3; Poor = 2; Extremely Poor = 1. The total possible points a teacher may receive is 140.

	7	6	5	4	3	2	1
	superior	very good	good	average	fair	poor	extremely poor
1. Personality (alert, tactful, patient, sense of humor)							
2. Character (dependable, honest, sincere, tolerant, mature)							
3. Appearance (neat, well-groomed, appropriately dressed)							
4. Flexibility (ability to adapt to situations at hand. make adjustments in lesson plans and activities as needed)							
5. Emotional Adjustment of Teacher (good emotional control, open-minded)							
6. Teacher's attitude toward T.M.R. children							
7. Attitudes of pupils in class toward this teacher							
8. Teacher's understanding of pupil behavior problems							
9. Teacher's ability to handle discipline							
10. Teacher's enthusiasm in working with T.M.R. children							

	7	6	5	4	3	2	1
	superior	very good	good	average	fair	poor	extremely poor
11. Teacher's willingness to handle classroom procedures (i.e., records, school forms, paper work)							
12. Teacher's ability to provide for individual differences in class							
13. Teacher's ability to sustain motivation of the class							
14. Teacher's ability to make a smooth transition from activity to activity							
15. Teacher's ability to plan lessons that are appropriate to C.A. and M.A. level of class							
16. Teacher's ability to plan for and work with groups in the class							
17. Teacher's ability to accept and make use of constructive criticism or suggestions							
18. Teacher's ability to develop a positive relationship with the special education staff							
19. Teacher's ability to develop a positive relationship with the regular school staff							
20. Teacher's ability to develop a positive relationship with parents of classroom pupils							

DIRECTIONS: Using the same scale as above, please check the numerical value or descriptive term that approximates your evaluation of this teacher on the following comparison items:

	7	6	5	4	3	2	1
	superior	very good	good	average	fair	poor	extremely poor
1. Supervisor's over-all impression of this teacher's ability in relation to other teachers in the profession - including regular grade teachers							
2. Supervisor's over-all impression of this teacher's ability in relation to T.M.R. teacher's							

DIRECTIONS: **Please circle the appropriate response.**

1. As a supervisor, my main area of work is in

   A. General or regular education

   B. Special education (including T.M.R.'s)

   C. Other

APPENDIX D

CAIN-LEVINE SOCIAL COMPETENCY SCALE

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CAIN - LEVINE
SOCIAL COMPETENCY SCALE

by Leo F. Cain, Samuel Levine, and Freeman F. Elzey
San Francisco State College

Child's Name ____________________
Parent's Name ____________________
Address ____________________
____
____
Other Data ____________________ *Sex: M* F*
____
____
____

	YEAR	MONTH	DAY
Date			
Birthdate			
Child's Age			

	Raw Score	*Percentile*
C		
SS		
I		
SH		
Adj*		
Total		

**If child is male, add the appropriate correction to his SH raw score:*

For CA 5-0 to 5-11	2 points
For CA 6-0 to 7-11	3 points
For CA 8-0 or over	4 points

REMARKS:

Interviewer: ____________________
Agency: ____________________

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BEGIN HERE

Check the appropriate statement and enter its number in the correct column.

PERSONAL CARE

1. DRESSING
   1. Cannot put on any clothing.
   2. Can put on most clothing, can zip, cannot button.
   3. Can put on most clothing, can zip and button.
   4. Completely dresses self, except for shoe tying.
   5. Completely dresses self, including shoe tying.

2. TYING SHOE LACES
   1. Cannot pull laces tight.
   2. Can pull laces tight.
   3. Can make first part of the knot.
   4. Can tie bow.

3. INITIATING DRESSING
   1. Does not initiate dressing.
   2. Occasionally initiates dressing.
   3. Frequently initiates dressing.
   4. Nearly always initiates dressing.

4. UNDRESSING
   1. Cannot remove any clothing.
   2. Takes off most clothing, can unzip, but cannot unbutton.
   3. Takes off most clothing, can unzip and unbutton.
   4. Completely undresses self.

5. CARE OF SHOES
   1. Cannot wipe shoes.
   2. Can wipe shoes, but cannot brush or polish.
   3. Can wipe and brush shoes, but cannot polish.
   4. Can clean, brush and polish shoes.

6. WASHING HANDS AND FACE
   1. Cannot wash hands or face.
   2. Partially washes hands and face; needs help in finishing.
   3. Washes hands and face, but needs to be checked each time.
   4. Washes hands and face and sometimes needs to be checked.
   5. Washes hands and face and does not have to be checked.

7. BRUSHING TEETH
   1. Cannot brush teeth.
   2. Makes brushing motions, but does not brush adequately.
   3. Brushes teeth adequately, but cannot apply paste.
   4. Applies paste and brushes teeth adequately.

8. KEEPING NOSE CLEAN
   1. Does not keep nose clean.
   2. Occasionally cleans nose.
   3. Frequently cleans nose.
   4. Nearly always cleans nose.

9. TOILETING
   1. Does not wipe self.
   2. Occasionally wipes self.
   3. Frequently wipes self.
   4. Nearly always wipes self.

MEALTIME SKILLS

10. USE OF UTENSILS
    1. Cannot use utensils in feeding self.
    2. Feeds self only with spoon.
    3. Feeds self with fork.
    4. Uses spoon and fork and can cut with knife in eating.

Notes:

11. USE OF KNIFE SH →
    1. Cannot use knife in eating.
    2. Spreads butter, jam, etc., with knife.
    3. Cuts soft foods, such as meat patties, French toast, etc.
    4. Cuts meat, if removed from bone.

12. FOOD PREPARATION SH →
    1. Cannot prepare simple foods.
    2. Prepares sandwiches not requiring spreading, such as cold cuts, cheese, etc.
    3. Prepares sandwiches requiring spreading such as peanut butter, cheese spread, etc.
    4. Prepares food requiring mixing, such as cold puddings, cold drinks, etc.
    5. Prepares foods requiring cooking, such as Jello, oatmeal, etc.

35 ☐

13. TABLE SETTING SS →
    1. Does not place silver, plates, cups, etc., on table.
    2. Simply places silver, plates, cups, etc., on table.
    3. Simply places items around table, not necessarily where they belong.
    4. Places plates, glasses, and utensils in positions he has learned.
    5. Places all eating utensils, napkins, salt, pepper, sugar, etc., in positions he has learned.

36 ☐

37 ☐

14. CLEARING TABLE SH →
    1. Cannot clear table.
    2. Clears table of unbreakable dishes and silverware.
    3. Clears table of breakable dishes and glassware.
    4. Clears table, scrapes and stacks breakable dishes for washing.

38 ☐

GENERAL TASKS AND RESPONSIBILITY

39 ☐

15. CLEANING UP LIQUIDS SH →
    1. When cleaning up spilled liquids he smears over larger area, making a bigger mess.
    2. Blots up some liquid, but job must be completed by someone else.
    3. Blots up liquid area but requires finishing touches by someone else.
    4. Cleans up liquid and does not require someone to finish job.

40 ☐

16. CLEANING UP MESS I →
    1. Does not take initiative in cleaning up own mess.
    2. Occasionally takes initiative in cleaning up own mess.
    3. Frequently takes initiative in cleaning up own mess.
    4. Nearly always takes initiative in cleaning up own mess.

41 ☐

17. REPORTING ACCIDENTS I →
    1. Does not report accidents (e.g., spilling, breaking, etc.)
    2. Occasionally reports accidents.
    3. Frequently reports accidents.
    4. Nearly always reports accidents.

42 ☐

18. COMPLETING TASKS When given responsibility for a task (e.g., picking up, cleaning room) he: I →
    1. Does not do task without being reminded.
    2. Occasionally does task without being reminded.
    3. Frequently does task without being reminded.
    4. Nearly always does task without being reminded.

43 ☐

19. ATTENDING TO TASKS Child will pay attention to task (e.g., cleaning up, putting things away): SS →
    1. If time does not exceed five minutes.
    2. If time does not exceed ten minutes.
    3. If time does not exceed fifteen minutes.
    4. Even if time exceeds fifteen minutes.

44 ☐

20. MAKING BED SH →
    1. Cannot make or undo bed.
    2. Can undo but cannot make bed.
    3. Can spread sheets and blankets on bed, but cannot tuck or put pillow in case.
    4. Can completely make bed, including tucking and putting pillow in case.

C

Notes:

21. SWEEPING SH →
    1. Cannot sweep floor.
    2. Sweeps floor where there is no furniture, but is unable to pick up dirt in dust pan.
    3. Sweeps floor where there is no furniture, and can pick up dirt in dust pan.
    4. Sweeps under furniture, such as tables and chairs, and can pick up dirt in dust pan.

22. FOLDING ARTICLES SH
    1. Cannot fold any articles.
    2. Can fold washcloths, towels and pillow cases with help.
    3. Can fold washcloths, towels and pillow cases without help.
    4. Can fold washcloths, towels and pillow cases without help, and sheets, blankets and bedspreads with help.
    5. Can fold all of above items without help.

23. PUTTING TOYS AWAY I
    1. Puts toys away only when directed to do so.
    2. Occasionally puts toys away without being told.
    3. Frequently puts toys away without being told.
    4. Nearly always puts toys away without being told.

24. HANGING UP CLOTHES I
    1. Does not hang up clothes without being told.
    2. Occasionally hangs up clothes without being told.
    3. Frequently hangs up clothes without being told.
    4. Nearly always hangs up clothes without being told.

25. GOING ON ERRANDS SS →
    1. Cannot be sent on errands to other people.
    2. Can be sent on errands with note to other people.
    3. Can be sent on errands without note if only one object is desired.
    4. Can be sent on errands without note if no more than two objects are desired.

26. FREEDOM OF MOVEMENT SS
    1. Does not go out of house or yard alone.
    2. Goes out alone in the immediate area of the house.
    3. Goes freely on his own block.
    4. Goes several blocks alone.

27. ANSWERING TELEPHONE SS →
    1. Cannot answer telephone.
    2. Answers telephone, but unable to take message and/or call appropriate person.
    3. Answers telephone, calls appropriate person. Cannot take message.
    4. Answers telephone, calls appropriate person and takes message.

INTERPERSONAL SKILLS

28. SHARING SS →
    1. Does not share toys with other children.
    2. Sometimes shares toys with other children.
    3. Usually shares toys with other children.
    4. Nearly always shares toys with other children.

29. BORROWING SS →
    1. Frequently takes objects when in use by others.
    2. Takes other's objects when not in use.
    3. Sometimes asks permission to use other's objects.
    4. Usually asks permission to use other's objects.
    5. Nearly always asks permission to use other's objects.

30. RETURNING PROPERTY When he has borrowed something he: SS
    1. Rarely, if ever, returns property to owner.
    2. Sometimes returns property to owner.
    3. Usually returns property to owner.
    4. Nearly always returns property to owner.

31. PLAYING WITH OTHERS SS →
    1. Usually plays by self.
    2. Plays with others but limits play to one or two children.
    3. Occasionally plays with a larger group (three or more children).
    4. Usually plays with a larger group (three or more children).

32. INITIATING PLAY I
    1. Does not seek other children to play with.
    2. Occasionally seeks other children to play with.
    3. Frequently seeks other children to play with.
    4. Nearly always seeks other children to play with.

33. OFFERING ASSISTANCE I
    1. Does not offer assistance to others.
    2. Occasionally offers assistance to others.
    3. Frequently offers assistance to others.
    4. Nearly always offers assistance to others.

Notes:

34. HELPING OTHERS

SS →

1. Never helps other children .
2. Helps another child only when they are playing together.
3. Sometimes stops his own play to help another child.
4. Usually stops his own play to help another child.

COMMUNICATION

35. USE OF LANGUAGE

1. Says no words — gestures only.
2. Speaks in incomplete sentences.
3. Speaks in complete sentences.
4. Speaks in more complex sentences, connecting a number of actions or statements.

36. CLARITY OF SPEECH

1. Communicates by gesture only.
2. Can speak, but speech is frequently indistinct.
3. Speech is somewhat clear but occasionally indistinct.
4. Speech is generally clear and distinct.

37. UNDERSTANDABLE SPEECH

1. Cannot be understood by anyone.
2. Can be understood by immediate family only.
3. Can be understood by neighbors and friends.
4. Can be understood by most people.

38. IDENTIFICATION

1. Cannot state first name.
2. Can state first name only.
3. Can state full name.
4. Can state full name and address.

39. REPEATING WORDS

1. Cannot repeat sounds or words made by others.
2. Can repeat most sounds made by others.
3. Can repeat most words made by others.
4. Can repeat complete sentences made by others.

40. INDICATING WANTS

1. Does not indicate, even by gesture, that he wants someone to share something with him.
2. Indicates by gesture and limited speech but does not name object (i.e., "I want," "Give me.")
3. Indicates that he wants someone to share with him by naming objects.
4. Uses complete sentence to express his desire for someone to share with him.

41. ANSWERING QUESTIONS When asked a question he:

1. Does not respond.
2. Responds by nodding, pointing or other gesture.
3. Verbally answers question, but with incomplete sentence.
4. Verbally answers question with complete sentence.

42. ANSWERING DOOR

1. Does not gesture or speak, just stands there.
2. Indicates that someone is at door by gesture only.
3. Indicates that someone is at door by using incomplete sentence.
4. Indicates that someone is at door by using complete sentence.

43. DELIVERING MESSAGES

1. Cannot deliver messages by gesture or other means.
2. Can deliver a simple message by gesture only.
3. Can deliver a simple message verbally.
4. Can deliver a more complex message verbally (more than one thought or activity).

44. RELATING OBJECTS TO ACTION

1. Cannot name objects in pictures or story books.
2. Can name objects and people in pictures but cannot indicate actions.
3. Can relate objects to action but unable to connect actions into a story.
4. Can connect actions in a picture to tell a story.

SS	I	SH
34 ☐		11 ☐
		21 ☐
		12 ☐
		22 ☐
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13 ☐	23 ☐	
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27 ☐		
		6 ☐
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	17 ☐	7 ☐
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31 ☐		
	32 ☐	10 ☐
		20 ☐
	33 ☐	

← **Total Each Column and** →

Transcribe Scores to Next Page

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APPENDIX E

STUDENT ATTITUDE QUESTIONNAIRE

DIRECTIONS

We are interested in different people's feelings about doing things with other people. We would appreciate your candid responses to the accompanying questionnaire. Your responses will remain anonymous. PLEASE DO NOT WRITE YOUR NAME OR ANY IDENTIFYING MARKS ON YOUR ANSWER SHEET.

There are twenty questions in this questionnaire. You are asked to respond to each question separately by indicating a response for each of twelve types of people listed on your answer sheet.

In making your responses, please follow these directions carefully:

1. Read the first question carefully.
2. Read the twelve words or phrases listed on your answer sheet.
3. Respond to question #1 for each listing, working down the column provided for the question. Use the following key to making responses:

   KEY

   1. . . . . Very Comfortable
   2. . . . . Comfortable
   3. . . . . Indifferent
   4. . . . . Uncomfortable
   5. . . . . Very Uncomfortable

4. Follow the above procedure for all remaining questions.
5. Remember: RESPOND TO EACH LISTING (ROW) FOR A QUESTION BEFORE MOVING ON TO THE NEXT QUESTION.
6. Work as rapidly as possible always working down the column designated to the question on your answer sheet.
7. We are interested in your first response to each item. Therefore, please do not erase any responses.

PLEASE TURN THE PAGE AND BEGIN QUESTION #1

1. . . . Very Comfortable 3. . . . Indifferent 5. . . . Very Uncomfortable
2. . . . Comfortable 4. . . . Uncomfortable

QUESTIONNAIRE

1. How would you feel about teaching each of the persons listed?

2. How would you feel about sharing a room with each of the persons listed?

3. How would you feel about eating in public with each of the persons listed?

4. How would you feel about working with each of the persons listed?

5. How would you feel about traveling in a bus with each of the persons listed?

6. How would you feel about dating each of the persons listed?

7. How would you feel about employing each of the persons listed?

8. How would you feel about kissing each of the persons listed?

9. How would you feel about going to church with each of the persons listed?

10. How would you feel about going to a movie with each of the persons listed?

11. How would you feel about marrying each of the persons listed?

12. How would you feel about your child playing with each of the persons listed?

13. How would you feel about swimming in public with each of the persons listed?

14. How would you feel about going to a dance with each of the persons listed?

15. How would you feel about sleeping in the same bed with each of the persons listed--assuming that they are of the same sex?

16. How would you feel about going shopping in a department store with each of the persons listed?

17. How would you feel about having a conversation in public with each of the persons listed?

18. How would you feel about being in the same social club or organization with each of the persons listed?

19. How would you feel about dressing a wound for each of the persons listed?

20. How would you feel about marrying the son or daughter of each of the persons listed?

THANK YOU FOR YOUR COOPERATION--
PLEASE BE CERTAIN THAT YOU HAVE RESPONDED
TO ALL QUESTIONS

ANSWER SHEET

Key

1 ....Very Comfortable
2 ....Comfortable
3 ....Indifferent
4 ....Uncomfortable
5 ....Very Uncomfortable

Question Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Brain-Injured Person																				
Educable Mentally Retarded Person																				
Blind Person																				
Cerebral Palsied Person																				
Gifted Person																				
Mongoloid Person																				
Crippled Person																				
Emotionally Disturbed person																				
Deaf Person																				
Trainable Retarded Person																				
Normal Person																				
Stuttering Person																				

APPENDIX F

THE PURDUE TEACHER OPINIONAIRE

Reprinted from - The Purdue Teacher Opinionaire
by - Ralph R. Bentley and Averno M. Rempel
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APPENDIX F

DESCRIPTION OF PTO SUBSCORES[1]

Factor 1. Teacher rapport with principal deals with the teacher's feelings about the principal--his professional competency, his interest in teachers and their work, his ability to communicate, and his skill in human relations.

Factor 2. Satisfaction with teaching pertains to teacher relationships with students and feelings of satisfaction with teaching. According to this factor, the high morale teacher loves to teach, feels competent in his job, enjoys his students, and believes in the future of teaching as an occupation.

Factor 3. Rapport among teachers focuses on a teacher's relationships with other teachers. The items here solicit the teacher's opinion regarding the cooperation, preparation, ethics, influence, interests, and competency of his peers.

Factor 4. Teacher salary pertains primarily to the teacher's feelings about salaries and salary policies. Are salaries based on teacher competency? Do they compare favorably with salaries in other school systems? Are salary policies administered fairly and justly, and do teachers participate in the development of these policies?

Factor 5. Teacher load deals with such matters as record-keeping, clerical work, red tape, community demands on teacher time, extra-curricular load, and keeping up to date professionally.

Factor 6. Curriculum issues solicits teacher reactions to the adequacy of the school program in meeting student needs, in providing for individual differences, and in preparing students for effective citizenship.

Factor 7. Teacher status samples feelings about the prestige, security, and benefits afforded by teaching. Several of the items refer to the extent to which the teacher feels he is an accepted member of the community.

Factor 8. Community support of education deals with the extent to which the community understands and is willing to support a sound educational program.

Factor 9. School facilities and services has to do with the adequacy of facilities, supplies and equipment, and the efficiency of the procedures for obtaining materials and services.

Factor 10. Community pressures gives special attention to community expectations with respect to the teacher's personal standards, his participation in outside-school activities, and his freedom to discuss controversial issues in the classroom.

[1] This description is taken from the Manual for the Purdue Teacher Opinionaire by Ralph R. Bentley and Averno M. Rempel which is published by the University Book Store, 360 State Street, West Lafayette, Indiana.

THE PURDUE TEACHER OPINIONAIRE

Prepared by Ralph R. Bentley and Averno M. Rempel

This instrument is designed to provide you the opportunity to express your opinions about your work as a teacher and various school problems in your particular school situation. There are no right or wrong responses, so do not hesitate to mark the statements frankly.

A separate answer sheet is furnished for your responses. Fill in the information requested on the answer sheet. You will notice that there is no place for your name. Please **do not** record your name. All responses will be strictly confidential and results will be reported by groups only. **DO NOT OMIT ANY ITEMS.**

DIRECTIONS FOR RECORDING RESPONSES ON ANSWER SHEET

Read each statement carefully. Then indicate whether you agree, probably agree, probably disagree, or disagree with each statement. Mark your answers on the separate answer sheet in the following manner:

	A	PA	PD	D
If you agree with the statement, blacken the space	●	PA	PD	D
If you are somewhat uncertain, but probably agree with the statement, blacken the space	A	●	PD	D
If you are somewhat uncertain, but probably disagree with the statement, blacken the space	A	PA	●	D
If you disagree with the statement, blacken the space	A	PA	PD	●

All marks should be heavy and completely fill the answer space. If you change a response, erase the first mark completely. Make no stray marks on the answer sheet. Please do not mark this booklet.

Copyright 1964, Purdue Research Foundation.

1. Details, “red tape,” and required reports absorb too much of my time.......... A PA PD D
2. The work of individual faculty members is appreciated and commended by our principal.......... A PA PD D
3. Teachers feel free to criticize administrative policy at faculty meetings called by our principal.......... A PA PD D
4. The faculty feels that their suggestions pertaining to salaries are adequately transmitted by the administration to the board of education.......... A PA PD D
5. Our principal shows favoritism in his relations with the teachers in our school.......... A PA PD D
6. Teachers in this school are expected to do an unreasonable amount of record-keeping and clerical work.......... A PA PD D
7. My principal makes a real effort to maintain close contact with the faculty.......... A PA PD D
8. Community demands upon the teacher's time are unreasonable.......... A PA PD D
9. I am satisfied with the policies under which pay raises are granted.......... A PA PD D
10. My teaching load is greater than that of most of the other teachers in our school.......... A PA PD D
11. The extra-curricular load of the teachers in our school is unreasonable.......... A PA PD D
12. Our principal's leadership in faculty meetings challenges and stimulates our professional growth.......... A PA PD D
13. My teaching position gives me the social status in the community that I desire.......... A PA PD D
14. The number of hours a teacher must work is unreasonable.......... A PA PD D
15. Teaching enables me to enjoy many of the material and cultural things I like.......... A PA PD D
16. My school provides me with adequate classroom supplies and equipment.......... A PA PD D
17. Our school has a well-balanced curriculum.......... A PA PD D
18. There is a great deal of griping, arguing, taking sides, and feuding among our teachers.......... A PA PD D
19. Teaching gives me a great deal of personal satisfaction.......... A PA PD D
20. The curriculum of our school makes reasonable provision for student individual differences.......... A PA PD D
21. The procedures for obtaining materials and services are well defined and efficient.......... A PA PD D
22. Generally, teachers in our school do not take advantage of one another.......... A PA PD D
23. The teachers in our school cooperate with each other to achieve common, personal, and professional objectives.......... A PA PD D

24. Teaching enables me to make my greatest contribution to society .... A PA PD D

25. The curriculum of our school is in need of major revisions .... A PA PD D

26. I love to teach .... A PA PD D

27. If I could plan my career again, I would choose teaching .... A PA PD D

28. Experienced faculty members accept new and younger members as colleagues .... A PA PD D

29. I would recommend teaching as an occupation to students of high scholastic ability .... A PA PD D

30. If I could earn as much money in another occupation, I would stop teaching .... A PA PD D

31. The school schedule places my classes at a disadvantage .... A PA PD D

32. Within the limits of financial resources, the school tries to follow a generous policy regarding fringe benefits, professional travel, professional study, etc. .... A PA PD D

33. My principal makes my work easier and more pleasant .... A PA PD D

34. Keeping up professionally is too much of a burden .... A PA PD D

35. Our community makes its teachers feel as though they are a real part of the community .... A PA PD D

36. Salary policies are administered with fairness and justice .... A PA PD D

37. Teaching affords me the security I want in an occupation .... A PA PD D

38. My school principal understands and recognizes good teaching procedures .... A PA PD D

39. Teachers clearly understand the policies governing salary increases .... A PA PD D

40. My classes are used as a "dumping ground" for problem students .... A PA PD D

41. The lines and methods of communication between teachers and the principal in our school are well developed and maintained .... A PA PD D

42. My teaching load in this school is unreasonable .... A PA PD D

43. My principal shows a real interest in my department .... A PA PD D

44. Our principal promotes a sense of belonging among the teachers in our school .... A PA PD D

45. My heavy teaching load unduly restricts my nonprofessional activities .... A PA PD D

46. I find my contacts with students, for the most part, highly satisfying and rewarding .... A PA PD D

47. I feel that I am an important part of this school system .... A PA PD D

48. The competency of the teachers in our school compares favorably with that of teachers in other schools with which I am familiar .... A PA PD D

49. My school provides the teachers with adequate audio-visual aids and projection equipment A PA PD D

50. I feel successful and competent in my present position A PA PD D

51. I enjoy working with student organizations, clubs, and societies A PA PD D

52. Our teaching staff is congenial to work with A PA PD D

53. My teaching associates are well prepared for their jobs A PA PD D

54. Our school faculty has a tendency to form into cliques A PA PD D

55. The teachers in our school work well together A PA PD D

56. I am at a disadvantage professionally because other teachers are better prepared to teach than I am A PA PD D

57. Our school provides adequate clerical services for the teachers A PA PD D

58. As far as I know, the other teachers think I am a good teacher A PA PD D

59. Library facilities and resources are adequate for the grade or subject area which I teach A PA PD D

60. The "stress and strain" resulting from teaching makes teaching undesirable for me A PA PD D

61. My principal is concerned with the problems of the faculty and handles these problems sympathetically A PA PD D

62. I do not hesitate to discuss any school problem with my principal A PA PD D

63. Teaching gives me the prestige I desire A PA PD D

64. My teaching job enables me to provide a satisfactory standard of living for my family A PA PD D

65. The salary schedule in our school adequately recognizes teacher competency A PA PD D

66. Most of the people in this community understand and appreciate good education A PA PD D

67. In my judgment, this community is a good place to raise a family A PA PD D

68. This community respects its teachers and treats them like professional persons A PA PD D

69. My principal acts as though he is interested in me and my problems A PA PD D

70. My school principal supervises rather than "snoopervises" the teachers in our school A PA PD D

71. It is difficult for teachers to gain acceptance by the people in this community A PA PD D

72. Teachers' meetings as now conducted by our principal waste the time and energy of the staff A PA PD D

73. My principal has a reasonable understanding of the problems connected with my teaching assignment .... A PA PD D

74. I feel that my work is judged fairly by my principal .... A PA PD D

75. Salaries paid in this school system compare favorably with salaries in other systems with which I am familiar .... A PA PD D

76. Most of the actions of students irritate me .... A PA PD D

77. The cooperativeness of teachers in our school helps make my work more enjoyable .... A PA PD D

78. My students regard me with respect and seem to have confidence in my professional ability .... A PA PD D

79. The purposes and objectives of the school cannot be achieved by the present curriculum .... A PA PD D

80. The teachers in our school have a desirable influence on the values and attitudes of their students .... A PA PD D

81. This community expects its teachers to meet unreasonable personal standards .... A PA PD D

82. My students appreciate the help I give them with their school work .... A PA PD D

83. To me there is no more challenging work than teaching .... A PA PD D

84. Other teachers in our school are appreciative of my work .... A PA PD D

85. As a teacher in this community, my nonprofessional activities outside of school are unduly restricted .... A PA PD D

86. As a teacher, I think I am as competent as most other teachers .... A PA PD D

87. The teachers with whom I work have high professional ethics .... A PA PD D

88. Our school curriculum does a good job of preparing students to become enlightened and competent citizens .... A PA PD D

89. I really enjoy working with my students .... A PA PD D

90. The teachers in our school show a great deal of initiative and creativity in their teaching assignments .... A PA PD D

91. Teachers in our community feel free to discuss controversial issues in their classes .... A PA PD D

92. My principal tries to make me feel comfortable when he visits my classes .... A PA PD D

93. My principal makes effective use of the individual teacher's capacity and talent .... A PA PD D

94. The people in this community, generally, have a sincere and wholehearted interest in the school system .... A PA PD D

95. **Teachers feel free to go to the principal about problems of personal and group welfare .... A PA PD D**

96. **This community supports ethical procedures regarding the appointment and reappointment of members of the teaching staff .... A PA PD D**

97. **This community is willing to support a good program of education .... A PA PD D**

98. **Our community expects the teachers to participate in too many social activities ...... A PA PD D**

99. **Community pressures prevent me from doing my best as a teacher .... A PA PD D**

100. **I am well satisfied with my present teaching position .... A PA PD D**

APPENDIX G

LETTER TO PARENTS

APPENDIX G

LETTER NO. 1 - (simplified version)

Dear Parents:

The Wayne County Intermediate School District is conducting a research project to explore a number of special education programs in Wayne County. The goal of the project is to improve your child's education.

We need your help because NAME OF CHILD attends NAME OF SCHOOL and has been included in this project. Only you know certain things about your child and it is vital to the project that we have the benefit of your judgment.

Enclosed you will find a brief questionnaire concerning your child. We are providing you with two checklists so that where possible we may have responses from both a father and a mother. Complete the enclosed questionnaires separately so that each parent gives his or her own idea of what the child does.

Please mark this now because it is urgent that we have the checklists right away. A stamped, preaddressed envelope has been included so that the questionnaires may be returned at no cost. Complete the forms and return them to our office no later than ______DATE______.

Thank you for your cooperation.

Sincerely,

P.S. Enclosed is checklist to help you provide us with this information.

APPENDIX H

DEFINITIONS

APPENDIX H

Definitions:

Educable mentally handicapped: The State of Michigan program for educable mentally handicapped provides for several definitions:

1. The mentally handicapped individual who has enough potential capacity to achieve some success in a school program adapted to his needs and who, within limited expectations, can make reasonably satisfactory adjustment to his job and community.

2. The mentally handicapped individual who at best can assume only partially his responsibilities to family and community.

Trainable mentally handicapped: A trainable individual, as determined through adequate diagnostic study by a state certified diagnostician, may be enrolled as a member of the program under this Act, if he:

1. Has not reached his 21st birthday;

2. Is developing at the rate of 1/3 to 1/2 of the normal child, or whose intelligence quotient is roughly between 30 and 50 as determined by tests;

3. Is ineligible for classes for the educable mentally retarded;

4. Has potentialities of self-care, for social adjustment in the home or neighborhood, and for economic usefulness in the home or neighborhood;

5. Is qualified for mentally handicapped program, Type B, but is not enrolled in one because he is over 14 years of age, or because the school district, either local or county, in which he resides, has no Type B program, or if the local or county school district has a Type B program, he is not enrolled in the program through no fault of his own.

APPENDIX I

MODEL

MODEL

AN INNOVATIVE MODEL FOR PRE AND IN-SERVICE EDUCATION OF TEACHERS OF THE TMR IN WAYNE COUNTY

The initial grouping of the TMR has received little attention heretofore. This may be due to the fact that most communities have a relatively small number of classes, hence, CA is, of necessity, the major consideration. When there is a sufficient number of children in a given program (at least 80-100), initial grouping has usually utilized CA and observable social behavior without the use of an instrument prepared for grouping purposes. There are no statistics available as to the reliability of this trial and error method. Experience within Wayne County has varied with the use of this system. It appears, however, that more shifting of children occurs with the CA and observable behavior criteria than when an instrument for determining communication skill is utilized. One grouping technique which appears to be more related to present day knowledge is grouping on the basis of communication skill. Since the ability to communicate is fundamental to functioning within our society, it seems logical that consideration of communication skill for grouping purposes is basic to programming for the TMR. It was on this premise that Nancy Brown et al (1965) developed a communication scale to measure this ability in the TMR. The scale assesses communication from the first signs of a child's smiling at his mirror image, whinpering, laughing aloud and progresses through each natural manifestation of communication that accompanies the normal growth pattern. These include imitating adults, responding to his own name, matching and naming objects, finding pictures, representing his own or similar experiences, speaking in full sentences and hopefully writing his own name. The ultimate achievement being that of the transfer of learning by his own judgement.

Brown's Communication Scale showed positive results in the empirical testing conducted in Wayne County. (Brown 1965-67, Melton, 1967) Melton's group of eighty TMR children required only three individuals to be changed from the initial group. In addition the teachers working with the TMR grouped by the Communication Scale reported that goal setting and the development of appropriate learning experiences for the groups was less complex and more rewarding than the trial and error method previously utilized. It appeared to them that this was true because of the similarity of the needs of the TMR children within each group. They further suggested that children might be learning more readily from each other since there was a commonality in the individual goals making the achievement of several activities possible by more members of the group.

Hudsons study of TMR, (1960), called attention to the lack of appropriateness of many of the learning experiences provided by teachers toward the development of the stated goals of the programs. However, in our program the development of realistic goals and the rewarding learning experiences provided to achieve these goals with children grouped by their communication ability is fundamental. One day per month is provided for in-service education and planning.

The Nancy Brown Guidelines, Achievement of the TMR, provides a Checklist which serves as the guide for the teacher. The ingredients of this list are in keeping with the needs of every day living. Normal children acquire these with very little assistance during their growth process while the TMRs must be taught.

The summarization of the categories which follows briefly describes the thrust of the checklists. These lists are considered, by those who have evolved them, to include only a portion of the scope of an adequate educational program for the TMR. The leveling of sequence is based upon no statistical evidence and should therefore not be considered to be "correct". The checklist reflects a segment of the initial stage in the development of techniques for the educational evaluation of the TMR. The distribution of these lists to the teachers of TMR in Wayne County, Michigan, is in order that they may serve as a resource to the teacher as he attempts to evaluate youngsters for the purpose of educational planning. They should not be considered to be a reliable or valid instrument. Research is presently planned however, to determine the reliability of the checklists.

A. The use of the Guidelines

1. After an initial evaluation of the child(Communication Scale) a check is placed on the checklist to indicate that which the child can do upon entering school.

2. Specific immediate goals are then established for the child.

3. A date is placed on the checklist to indicate when the child achieved a goal. (Learning is temporarily and arbitrarily defined as five consecutive successful performances).

4. A date in red is placed on the checklist to indicate when parents report successful performance in the home and/or community.

B. Summary of the Guidelines Checklist

1. Self Management - Food

The process progresses from the act of lifting a glass with two hands through finite steps which reach their peak in food preparation, table-setting, and eating in a restaurant. The latter acts maybe self initiated or satisfactorily accomplished with partial supervision.

2. Self Management - Clothing

This process also moves from a simple act of removing socks to the complex task of caring for one's own clothes. (Washing, ironing, spot cleaning, utilization of commercial establishment when required).

3. Self Management - Transportation

This process may begin with the act of rolling over progressing to independent travel to work, the store, etc.

4. Self Management - Grooming

The simple process of hand washing with assistance progresses to the total care of one's own total needs: shaving, use of cosmetics, care of own hair and clothing.

5. Self Management - Health

This proceeds from the development of good sleeping patterns (naps etc.) to initiating care of one's own teeth, eyes, nose, toileting, exercise, and initiating of steps to acquire necessary items to accomplish these ends. (Shopping, etc.).

6. Self Management - Communication

The process moves thru the areas mentioned on the first page of the Model.

7. Self Management - Leisure Time Activities

These include individual and group activities utilizing as many areas natural to family and community interests as can be developed. (Bowling, picnicing, simple card games as well as passive or spectator activities, listening to music, watching others in some sport or activity).

8. Self Management - Work

This too is individual and group training, This moves from the simplest household tasks, yard and lawn work, use of common hand tools, constantly increasing the skill training process. The degree that the individual can perform comfortably and successfully will probably determine the placement of the individual following the public school experience. The placement possibilities range from partial independent work in the home, community, adult activity center, or sheltered workshop.

It seems fair to assume that when progress has occurred with the child to the degree that goals have been achieved the process is an effective one. A careful evaluation of the total process is a necessary part of the program plan. This model has two facets in the evaluation plan. It will assess the progress of TMR pupils as well as the teaching process through computerized interaction analysis.

C. Evaluation

It is believed that one means of evaluating the process and the goals achieved is the carry over of school achievement or performance of the TMR in the home and community. An annual status report prepared by the teacher in addition to several progress reports is received by the parents. The annual report is in the form of a Diagnostic Profile. It summarizes the activities outlined in the Guidelines, providing the parent with a profile of the child's achievements at that time. Throughout the school year the acquisition of skills will have been reported to the parents to provide for consistent utilization of the new skills in the home and school. These might include cleaning the bathroom, making a bed, making soup, washing windows, ironing etc.

In addition a brief Parent Evaluation Sheet list is sent to parents upon which they indicate the performance of of the child as they have observed it. By these techniques the achievement of goals or lack of is known.

It will be necessary, however, to study the teacher in the teaching process to determine whether or not modification of the teaching process could alter the progress of the child. It is not enough to accept "some progress" as an indication of the effectiveness of the teaching process. It is important to discover whether change in the teaching process may cause a child to make more progress or progress at a greater rate.

An in-service education plan will include the present one day per month set aside for this and planning purposes. The evaluation plan for the teacher will provide an on the spot self-evaluation opportunity. Such a system is possible through the use of some advanced computerized techniques.

The specific computer program to accomplish the feed-back to the teacher has not been determined at this writing.

REFERENCES

Brown, Nancy, Communication Scale for Grouping Purposes, Unpublished, Wayne County Intermediate School District, 1965.

Brown, Nancy, Guidelines, Achievement of the Trainable Mentally Retarded, Wayne County Intermediate School District, 1965.

Hudson, M. Procedures for Teaching Trainable Children. Council for Exceptional Children Research, 1960 (Monograph No. 2, Series A).

DIAGNOSTIC PROFILE

May, 1969

DOWNRIVER REGIONAL PROGRAM

The enclosed form is an evaluation of your child by his/her teacher

We have developed this comprehensive evaluation form to be used as an end-of-year report to each child's parents. This evaluation covers the areas of:

1. Self-Care (pink pages)
2. Physical Growth and Development (blue)
3. Speech and Language Development (white)
4. Intellectual Development (green)
5. Behavior Patterns and General Manners (yellow)
6. Work Habits (blue)

This report will tell you what your child can do in school. It will tell you what we hope he will be able to do at some future time. It can also serve as a guide for you as you train your child at home. Thus the home and school will be working together -- reinforcing each other.

As our program develops further and our facilities improve, the evaluation form will be revised and expanded in the coming years.

It is hoped that this present report on your child will be of real value to you. If you have questions about it or wish to discuss it with the teacher or with me, please feel free to call me for an appointment - 388-0260.

Beatrice L. Seece, Principal

GOAL CARD

SM - Clothing ______________

X = successful performance					Name	Goal

Five consecutive successful performances=learning. Date checklist then. Establish new goal.

Evaluation Key

1. Doesn't try
2. Tries with urging but is often unsuccessful
3. Sometimes tries but needs supervision
4. Usually tries, is often completely successful but needs checking
5. Complete success, no need to be checked
6. Sees need to do task - does it well after asking permission

I. SELF CARE

A. Toileting

1. Habit trained

___ a. goes when taken
___ b. wipes self successfully
___ c. flushes toilet
___ d. washes hands
___ e. wipes hands
___ f. leaves bathroom neat

2. Toilet trained

___ a. goes when need arises
___ b. wipes self successfully
___ c. flushes toilet
___ d. washes hands
___ e. wipes hands
___ f. leaves bathroom neat

B. Undressing

___ 1. Unzips, unsnaps, unbuttons, unties, unbuckles properly
___ 2. Removes outer clothing - mittens, scarf, cap, coat, boots & snowpants
___ 3. Puts outer clothing in proper place

C. Dressing

___ 1. Puts on indoor clothing (underpants, undershirt, dress or shirt, pants, socks, shoes)

___ 2. Puts shoes on correct feet

___ 3. Can pull laces tight but unable to tie shoes

___ 4. Can untie shoe laces

___ 5. Can tie shoes correctly

___ 6. Can unzip or unsnap clothes

___ 7. Can zip or snap clothes

___ 8. Can tie or buckle clothing

___ 9. Can snap and hook or unhook fasteners

___ 10. Can unbutton large buttons

___ 11. Can button large buttons

___ 12. Can unbutton small buttons

___ 13. Can button small buttons

D. Personal Hygiene

___ 1. Cares for nose

___ 2. Covers mouth or nose when sneezing or coughing

___ 3. Washes hands whenever needed

___ 4. Washes and wipes hands whenever needed

___ 5. Washes face whenever needed

___ 6. Washes and wipes face whenever needed

___ 7. Cleans fingernails

___ 8. Combs hair (cleans brush and comb)

___ 9. Files or clips own nails

___ 10. Cares for self during menustration

___ 11. Uses deodorant

___ 12. Uses mirror independently to see when needed

___ 13. Cleans boots

___ 14. Cleans and shines shoes

___ 15. Can hand-wash hosiery, socks, etc.

___ 16. Can use clothes brush well

E. Mealtime Skills

___ 1. Washes hands before handling food or dishes

___ 2. Sets own place

___ 3. Sets table places

___ 4. Serves and passes food

___ 5. Handles finger foods tidily (sandwiches, fruit, etc.)

___ 6. Keeps fingers out of mouth

___ 7. Drinks from cup

___ 8. Can use straw

___ 9. Wipes mouth with napkin

___ 10. Uses spoon

___ 11. Uses fork

___ 12. Cuts meat on plate with fork, or fork and knife

___ 13. Chews and swallows a bite at a time

___ 14. Bites off mouthful of sandwich, chews and swallows before taking another

___ 15. Does not reach or pass across the table

___ 16. Has good appetite - eats well

___ 17. Leaves silver on plate until dismissed

___ 18. Waits until others are served

___ 19. Stays at place until dismissed

F. Homemaking Skills

___ 1. Butters bread

___ 2. Makes sandwiches

___ 3. Prepares kool-aide

___ 4. Pours milk for self or others

___ 5. Cleans fruits and vegetables

___ 6. Peels potatoes, carrots, etc.
___ 7. Prepares jello or other uncooked dessert package mixes
___ 8. Opens cans
___ 9. Heats food from can
___ 10. Heats soup from can requiring addition of milk or water
___ 11. Heats TV dinner in electric frying pan
___ 12. Cuts or drops cookies already prepared
___ 13. Pops corn (packaged)
___ 14. Serves cake
___ 15. Puts used dishes in proper place
___ 16. Wipes up spilled food or liquids when told
___ 17. Cleans up own mess independently without being told
___ 18. Reports accidents
___ 19. Clears table
___ 20. Wipes table (crumbs off with damp sponge)
___ 21. Washes dishes
___ 22. Rinses and wipes dishes
___ 23. Stacks dishes and sorts silver
___ 24. Puts dishes and silver away in proper place
___ 25. Cleans sink, counter, and wipes up any spills and drips
___ 26. Leaves stove clean
___ 27. Does assigned tasks without being reminded
___ 28. Child can concentrate on assigned tasks when time exceeds fifteen minutes
___ 29. Can completely make bed, including tucking and putting pillow in case
___ 30. Picks up trash and litter
___ 31. Sweeps under furniture, such as table and chairs and picks up dirt in dustpan

___ 32. Scrubs tiled floor

___ 33. Wet-mops floor

___ 34. Applies floor wax

___ 35. Cleans painted woodwork

___ 36. Dusts furniture properly

___ 37. Polishes furniture

___ 38. Folds washclothes, towels, pillow case, sheet, blanket and bedspread without help

___ 39. Puts toys, games or tools away without being told

___ 40. Hangs up clothes and wraps without being told

___ 41. Uses sponge - rubber mop and rinses it properly

___ 42. Cleans toilet (uses bowl cleaner, brush and disinfectant)

___ 43. Cleans windows and glass shelves

___ 44. Polishes silver

___ 45. Cleans inside of automobile

___ 46. Washes and dries automobile

___ 47. Weeds around shrubs and plants

___ 48. Rakes grass and properly disposes of it

___ 49. Rakes leaves and properly disposes of them

___ 50. Cuts grass and cares for equipment

___ 51. Shovels snow to make a path

___ 52. Sprinkles de-icer on walks and driveway

___ 53. Rides on bus and helps with smaller children

___ 54. Helps in classes of younger children

___ 55. Sets up or stacks chairs for group

Evaluation

The items are checked that best describe the child's physical development

II. PHYSICAL GROWTH AND DEVELOPMENT

___ 1. Has erect posture
___ 2. Walks without rhythm, and with a bizarre gait
___ 3. Walks rhythmically - but shuffles, drags feet, or drags toes
___ 4. Walks rhythmically - picks up feet
___ 5. When running it is only a hurried walk
___ 6. Runs rhythmically but has difficulty stopping
___ 7. Runs rhythmically with controlled stop
___ 8. Tiptoes rhythmically
___ 9. Hops on one foot (note preference)
___ 10. Hops on alternating feet
___ 11. Jumps with both feet
___ 12. Jumps with one foot
___ 13. Walks forward on balance beam (2" beam)
___ 14. Walks forward and backward on 2" beam
___ 15. Slides sideways - step-together-step
___ 16. Skips with rhythm, alternating feet maintaining balance and terminating with control
___ 17. Crawls in and out of cartons, barrels, through tires, etc.
___ 18. Pedals and steers tricyle, tractor or any conveyance requiring circular pedaling
___ 19. Pushes buggy
___ 20. Pushes wheelbarrow
___ 21. Pulls wagon
___ 22. Pushes small vehicles on floor
___ 23. Pushes and steers toys
___ 24. Jumps rope

___ 25. Walks on training skates
___ 26. Walks on ball bearing skates
___ 27. Rides scooter
___ 28. Propels self in wagon
___ 29. Rolls ball
___ 30. Rolls ball to target
___ 31. Kicks ball
___ 32. Bounces ball once and catches it
___ 33. Throws ball overhand
___ 34. Catches large ball
___ 35. Catches small ball with hands
___ 36. Bounces ball repeatedly
___ 37. Throws bean bag to large target (16 in.) from three feet
___ 38. Throws bean bag to small target (6 in.) from three feet
___ 39. Begins to bat ball
___ 40. Catches batted softball
___ 41. Serves for volley ball
___ 42. Returns ball overhead in volley ball
___ 43. Rolls ball with direction and purpose
___ 44. Receives rolled ball and returns it (rolling)
___ 45. Throws bean bag into large container
___ 46. Catches bean bag between chest and knee height
___ 47. Can form a circle with help
___ 48. Can form a circle
___ 49. Turns knob and pushes or pulls door open
___ 50. Walks with partner
___ 51. Takes partner and proceeds as directed
___ 52. Understands team play, relays, etc.

___ 53. Plays - shuffleboard, croquet, hopscotch, keep-away

___ 54. Colors a large single object within lines

___ 55. Colors a simple picture within lines

___ 56. Colors a picture with many different colors staying within lines

___ 57. Cuts with scissors following broad lines

___ 58. Cuts fine outlines with scissors

___ 59. Pastes neatly

___ 60. Paints objects neatly and carefully

___ 61. Holds and handles a pencil correctly

___ 62. Knows where to find supplies, books, records, etc.

Evaluation

The items are checked that best describe child's speech and language development

III. SPEECH AND LANGUAGE DEVELOPMENT

A. Speech

____ 1. Communicates by gestures only

____ 2. Speaks but is understood by no one

____ 3. Speaks a few words and gestures meaningfully

____ 4. Speaks but understood by family only

____ 5. Speaks but speech is frequently indistinct

____ 6. Speech is often clear; but occasionally indistinct

____ 7. Speaks in incomplete sentences

____ 8. Perseverates (meaningless repetition of single words or phrases)

____ 9. Speech is generally clear and distinct

____ 10. Speaks in complete sentences

____ 11. Speaks in more complex sentences, connecting a number of actions or statements

____ 12. Participates in conversation

B. Identification

____ 1. Tries to say first name

____ 2. Says first name only

____ 3. Says full name

____ 4. Says full name and address

____ 5. Says full name and address and telephone number

____ 6. Says full name, address, telephone number and birthdate

C. Communication of Needs

____ 1. Indicates his needs by gestures

____ 2. Indicates by limited speech and gestures his basic needs ("drink, bathroom," etc., "I want --", "Give me --")

____ 3. Uses complete sentence to express his desires

D. Answering Questions

___ 1. Repeats question or part of question; but gives no answer

___ 2. Answers by nodding, pointing or other gestures

___ 3. Answers question verbally with incomplete sentence

___ 4. Answers questions verbally with complete sentence

E. Delivering Messages

___ 1. Delivers simple written or verbal message by gesture only

___ 2. Delivers simple written message with a few words

___ 3. Delivers simple verbal message and waits for answer

___ 4. Delivers more complex verbal message and waits for an answer (more than one thought or activity)

___ 5. Answers telephone, calls appropriate person

___ 6. Answers telephone, calls appropriate person and takes message

Evaluation

The items are checked that best describe child's intellectual development

IV. INTELLECTUAL DEVELOPMENT

___ 1. Names objects in pictures and story books but is unable to indicate action

___ 2. Relates objects to action but is unable to connect actions into a story

___ 3. Connects pictured actions to tell story

___ 4. Scribbles with large crayon or chalk

___ 5. Places objects in specified area (toy in drawer, peg in pegboard)

  ___ a. Places 1" pegs in pegboard

  ___ b. Places 1/16" pegs in pegboard

  ___ c. Places 3/16" pegs in pegboard

___ 6. Knows own things - mittens, jackets, etc.

___ 7. Selects and sorts objects of one color but does not name them

___ 8. Selects and sorts objects of three or more colors but does not name them

___ 9. Selects and sorts objects of one color and names color

___ 10. Selects and sorts objects of three or more colors and names colors

___ 11. Selects and sorts objects of eight colors and names colors

___ 12. Sorts circle and square geometric solids

___ 13. Sorts circles, squares, triangles and can complete the three piece form board

___ 14. Stacks block tree

___ 15. Stacks circular block tree of six circles

___ 16. Nests three boxes

___ 17. Nests five boxes

___ 18. Strings large beads

___ 19. Strings large beads copying pattern

___ 20. Strings large beads using own pattern

___ 21. Uses large paintbrush with satisfaction

___ 22. Builds something with blocks and names results

___ 23. Can complete puzzles of four pieces

___ 24. Can complete puzzles of ten pieces

___ 25. Can complete puzzles of 15-20 pieces

___ 26. Can complete puzzles of more than 20 pieces

___ 27. Strings small beads

___ 28. Strings small beads copying pattern

___ 29. Strings small beads using own pattern

___ 30. Pastes paper on paper

___ 31. Makes designs in crayon

___ 32. Makes designs with paper, with clay, with fingerpaint

___ 33. Opens and shuts scissors

___ 34. Cuts with one hand holding paper

___ 35. Cuts along straight black line

___ 36. Cuts bold outline

___ 37. Cuts any pattern desired

___ 38. Cuts thread or string

___ 39. Cuts cloth

___ 40. Responds appropriately to "slow, fast, happy, sad, funny, not funny"

___ 41. Recognizes own name

___ 42. Recognizes names of children in group

___ 43. Recognizes foods that are good for us

___ 44. Touches and counts to five

___ 45. Looks only and counts to five

___ 46. Recognizes numerals one to five

___ 47. Can use number symbol from picture stimulation

___ 48. Selects correct cut out number symbol to match presented group of blocks or objects one to ten

___ 49. Writes correct number symbol to match presented groups of blocks one to ten

___ 50. Selects correct group of designated objects from mixed objects from heard symbol only one to ten

___ 51. Can show correct number of fingers from spoken number symbol one to ten

___ 52. Attaches correct symbol to group of blocks or objects one to ten

___ 53. Repeat above five to 20

___ 54. Recognizes words - boys, girls, men, women, keep-out, private, stop, go, etc.

___ 55. Copies square, triangle, diamond

___ 56. Traces square, triangle, diamond and circle and names them

___ 57. Traces own name in manuscript

___ 58. Reproduces letters of own name from a copy

___ 59. Writes own name from copy

___ 60. Writes own address from copy

___ 61. Writes own name spontaneously

___ 62. Writes own address spontaneously

___ 63. Recognizes and uses all words needed for his own protection

___ 64. Copies and can read words needed for his own protection

___ 65. Copies and can read work words

___ 66. Writes and can read work words

___ 67. Recognizes days of week

___ 68. Recognizes seasons of year and their meaning

___ 69. Recognizes coins - penny, nickel, dime, quarter, half dollar

___ 70. Can compare penny - nickel

___ 71. Can compare penny - nickel - dime

___ 72. Can compare penny - nickel - dime - quarter

___ 73. Tells time on hours
___ 74. Tells time to half-hour
___ 75. Tells time to quarter hour
___ 76. Tells time to five minute intervals
___ 77. Relates clock to school schedule
___ 78. Can re-tell a story
___ 79. Can make up a story
___ 80. Can dramatize a story
___ 81. Understands relationships of:
a. Pre-school
    ___ 1. Little - big
    ___ 2. Open - shut
    ___ 3. Down - up
    ___ 4. One - more
    ___ 5. Slow - fast
b. Primary
    ___ 1. Small - large
    ___ 2. Short - tall
    ___ 3. Few - many
    ___ 4. Less - more
    ___ 5. Short - long
    ___ 6. Before - after
    ___ 7. In front of - behind
c. Intermediate
    ___ 1. In - out
    ___ 2. Top - bottom
    ___ 3. High - low
    ___ 4. Over - under

___ 5. Above - beneath

___ 6. Inside - outside

___ 7. First - last

d. Teenage

___ 1. Beginning - end

___ 2. Before - after (numbers)

___ 3. Forward - back

___ 4. Empty - full

___ 5. All - some

___ 6. Some - none

___ 7. Little - much

82. Can demonstrate meaning of:

___ 1. Canful

___ 2. Boxful

___ 3. Glassful

___ 4. Bottleful

___ 5. Cupful

___ 6. Too full

___ 7. Tablespoon

___ 8. Teaspoon

___ 9. Half teaspoon

___ 10. Half cup

___ 11. Pint

___ 12. Quart

___ 13. Half gallon

___ 14. Dozen

___ 15. Half dozen

___ 16. Pound

Evaluation

1. Never
2. Sometimes
3. Often
4. Usually

V. BEHAVIOR PATTERNS AND GENERAL MANNERS

___ 1. Is aggressive - hits, bites, kicks

___ 2. Has temper tantrums

___ 3. Has unacceptable speech

___ 4. Is self-abusive

___ 5. Soils self

___ 6. Has negative attitude

___ 7. Is self-centered - must always win

___ 8. Stutters

___ 9. Perseverates in actions, words, or sounds

___ 10. Is hyperactive

___ 11. Is fearful

___ 12. Is imaginative - not realistic

___ 13. Is remote from others - in world of own

___ 14. Ignores those around him

___ 15. Is aware of world around him but reacts in no way

___ 16. Has no concept of sharing possessions

___ 17. Has concept of sharing but doesn't

___ 18. Plays by himself

___ 19. Watches others play - makes no attempt to join

___ 20. Engages in parallel play - does same as others but by himself

___ 21. Plays with others - limits play to one or two children

___ 22. Plays with larger group (three or more children)

___ 23. Seeks others to play with, has ideas of suggested activity but is also open to suggestion

____ 24. Participates in group activities
____ 25. Takes directions from peer leader
____ 26. Knows that pleasing others gains friends
____ 27. Takes turns
____ 28. Conforms to the rules
____ 29. Plays role of peacemaker
____ 30. Helps others
____ 31. Respects the property of others
____ 32. Works well in a group
____ 33. Listens to directions for doing a job
____ 34. Utilizes work time well
____ 35. Says "May I please have - or please"
____ 36. Says "Thank you" at proper times
____ 37. Says "Excuse me" at proper times
____ 38. Stands up to greet elders or be introduced
____ 39. Offers to take wraps for guests
____ 40. Walks to door with departing guests
____ 41. Doesn't monopolize conversation
____ 42. Doesn't interrupt conversation - waits
____ 43. Holds door open for strangers as well as family and friends
____ 44. Accepts criticism or correction
____ 45. Keeps a promise
____ 46. Respects authority
____ 47. Can be sent on errand with note
____ 48. Can be sent on errand without note
____ 49. Accepts self and one's abilities
____ 50. Is independent in entertaining self
____ 51. Is happy in school

Evaluation

1. Usually
2. Often
3. Sometimes
4. Never

VI. WORK HABITS

___ 1. Pays attention
___ 2. Follows instruction from teacher
___ 3. Works neatly and carefully
___ 4. Assembles materials to do a job
___ 5. Begins work promptly
___ 6. Does not waste materials
___ 7. Seeks help when needed
___ 8. Completes job
___ 9. Takes pleasure in achievement
___ 10. Accepts responsibility
___ 11. Relates to fellow workers
___ 12. Respects work results of peers
___ 13. Works jointly on a project
___ 14. Assumes leadership of work crews pleasantly
___ 15. Fills in pleasantly for unscheduled assignments due to absences
___ 16. Knows names and uses for equipment and materials
___ 17. Cares for tools
___ 18. Is willing to share tools or materials
___ 19. Puts tools and materials away in proper places
___ 20. Does all tasks cheerfully without argument
___ 21. Accepts criticism from teacher
___ 22. Establishes eye contact

Evaluation

1. Usually
2. Sometimes
3. Never

VII. MUSIC AND RHYTHM

___ 1. Listens to music and responds to rhythms by clapping or tapping feet

___ 2. Responds to rhythm activity and participates by marching, skipping, hopping, running, or some body movement

___ 3. Participates in rhythm band but doesn't follow beat or directions

___ 4. Participates in rhythm band and follows beat and directions

___ 5. Listens to songs but doesn't try to sing

___ 6. Tries to sing

___ 7. Joins in group singing

___ 8. Joins in action songs

___ 9. Can and does sing alone

___ 10. Is tone conscious and follows musical patterns

___ 11. Can sing along with a record

___ 12. Can manipulate a record player properly

___ 13. Understands proper care of records

___ 14. Enjoys musical games

___ 15. Enjoys dancing and uses proper positions

COMMENTS:

DATE ______________________________

Downriver Regional Program

PARENT EVALUATION SHEET

Please check yes and no questions

Yes No

___ ___ 1. Does he like school?

___ ___ 2. Is he happier than before he attended school here?

___ ___ 3. Has his relationships with family members improved?

___ ___ 4. Has his behavior with neighborhood children improved?

___ ___ 5. Is there improvement in behavior outisde the home on visits, outings, shopping, etc.?

___ ___ 6. Does he show greater respect for other peoples' property both in the home and in the neighborhood?

7. Is there any improvement in personal habits?

___ ___ A. Sleep better?

___ ___ B. Dress himself better?

___ ___ C. Tidier?

___ ___ D. Improved appetite?

___ ___ E. Improved eating habits?

___ ___ F. Are manners improved?

___ ___ G. Improvement in toilet routine?

___ ___ 8. Has any progress in speech been noted?

___ ___ 9. Is he less destructive and more careful of his belongings?

___ ___ 10. Does he amuse himself better?

___ ___ 11. Does he listen and talk better?

___ ___ 12. Does he show more confidence in self?

13. Does he show more interest and ability in helping with odd jobs?

___ ___ A. Around the home?

___ ___ B. Outside the home?

COMMENTS: ____